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ABSTRACT

Eleven position papers, prepared by the staff and guest lecturers of the Summer Institute on Approaches to Introductory College Geography Courses, focus on the purpose, nature, scope, structure, processes, content, and key concepts to be emphasized in introductory college geography courses. Since each lecturer presented his point of view, the collection reflects a variety of interests and academic ideology. The papers deal with topics concerning introductory physical geography, the role of climate in an introductory physical geography course, the relationship between physical and human geography, structure in geographic instruction, viewpoints in the geography of economic activity, coverage considered in an introductory economic geography course, characteristics of an introductory course currently being taught at the University of Iowa, problems and approaches to teaching an introductory course in cultural geography, the use of cultural concepts in geographical teaching, and an example of an introductory cultural geography course created to serve in a particular liberal arts setting. (SJM)

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Viewpoints and Themes

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THE SUMMER INSTITUTE ON APPROACHES TO INTRODUCTORY COLLEGE GEOGRAPHY COURSES
THE OHIO STATE UNIVERSITY, COLUMBUS, OHIO
1966

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FOREWORD

The eleven essays or position papers contained in this volume were prepared by the staff and guest lecturers of the Summer Institute on Approaches to Introductory College Geography Courses. The Institute, held at the Ohio State University in 1966, was jointly sponsored by the National Science Foundation and the Commission on College Geography of the Association of American Geographers.

The Institute was designed as a symposium to give the participants and staff an opportunity to discuss the purpose and content of introductory college geography courses, and the role of college geography in general education. Under each of four broad subject matter headings, two specific questions were to be asked: (1) what are the key concepts and processes to be stressed in an introductory college geography course; and (2) what recent research findings might be incorporated into such courses. Also included in the Institute discussions were reports on the implication of certain significant current government and professional programs concerned with geography and its role in general education. An evaluation report dealing with the Institute itself was prepared by the participants and a limited number of copies are available.

As a taking-off-point for discussion, each of the staff and guest lecturers prepared a position paper presenting his point of view in respect to a specific introductory geography course. The courses chosen were physical, economic-urban, cultural, and world regional geography. Although there was some discussion of a general introductory geography course, none of the papers is explicitly addressed to that problem. No attempt was made to outline a model course, to suggest teaching techniques or to provide substantive background detail in these papers. They simply present some views on introductory college geography which are held by eleven geographers of widely varying interests and academic ideology. Copies of all the papers were made available to staff, lecturers and participants prior to their presentation and groups of participants gave critiques of each paper.

Each of the authors had an opportunity in the light of critiques and discussion to revise his paper after presentation and prior to publication. The job of editing these papers has been essentially a mechanical one. No attempt has been made to change wording nor to bring about any degree of uniformity of structure or organization. Charles E. Trott of Ohio State University and the assistant for the Institute, has edited footnote references and bibliographies to gain uniformity and hence, greater ease of use.

Since participation at the Institute was limited, it was felt that publication of these papers would make them available to a much wider audience which might find them interesting. On behalf of the Institute staff I would like to extend my deepest appreciation to the guest lecturers and participants who demonstrated by their hard work and keen interest that the content of introductory college geography courses is a matter of great significance to the entire profession.

John R. Randall, Director
Summer Institute on Approaches
to Introductory College Geography Courses

Columbus, Ohio
April, 1967

INTRODUCTORY PHYSICAL GEOGRAPHY IN THE COLLEGE CURRICULUM

Melvin G. Marcus

Introduction

Geography is a monistic science—a distinctive discipline which operates freely within the totality of the earth's environment. Purely and properly defined, it is neither a social nor a physical science and efforts to so structure geography are artificial and self-defeating; attributing dualistic and dichotomous qualities to geographic research and teaching anathematizes the very meaning of geography. Yet the implications of such a position must necessarily trouble geographers. Is the entire world indeed our oyster? And, if so, must not the geographical practitioner deal shallowly with a variety of subjects with the one hand while the other holds aloft a torch flaming with unbecoming arrogance?

These questions are not as troublesome as we are inclined to make them. The basic subject matter of geography is unique and untreated, for the most part, in other sciences; that is, geographers have an abiding interest and curiosity which demands explanations of the earth as the home of man. To accomplish this, we view the world in terms of natural and cultural processes as they interact at the interface; we study how the earth-home influences the behavioral patterns of man and how man has altered his earth-home; and we concern ourselves with the dimensional (or spatial) patterns, arrangements, and flows which are a consequential manifestation of natural and human processes. Ultimately we combine these approaches to attain the total geographic perspective. Thus, it is not possible to place artificial limits on potential subject material. A good geographer should look at the entire world and not suffer inhibitions imposed by academic catalogues and government classification systems. Some two thousand years of geographic tradition tell us (despite a modern literature which has inundated us and sapped our energy with arguments of definition, often trivial) that the connecting thread of geography—its special subject matter and methodology—has withstood the tests of time and need.

This does not suggest perfection, but simply describes the geographer's raison d'être. If anything we have been imperfect in our efforts to take on such difficult subject matter and the search for better methodologies and meaningful concepts is a continuing one. There is no room for arrogance or pretension in geography nor, I hope, do many geographers exhibit these traits. Sauer must have struck a familiar chord with many when he said, "We are not a precocious lot, nor would we wish to be. We are unlikely to start early and we need a long time to mature."[1] Maturity surely implies recognition of reasonable limitations as well as intellectual competence. It follows that the treatment of geography must not be held inviolably rigid nor should it be felt that we own sole proprietary rights to the subject material. Geography's good fortune has been its breadth of interdisciplinary contact which has brought new ideas and new scholars to the discipline.

The Real World of American Geography

There are obvious and disturbing discrepancies between this "ideal" geography I have described and the real world so familiar to teachers and practitioners of geography in the United States. In that milieu, artificial subdisciplinary distinctions loom large. Hardly a department exists that has not had to make some choice between classification in the social or natural sciences. Within departments the classification spreads as it becomes administratively convenient to characterize and distinguish physical from human and systematic from regional geography.[2] Insofar as specialties are a recognized need in geography and insofar as course offerings must have titles, this kind of administrative manipulation is necessary and justifiable, but when the individual roles of each specialist and each titled course are viewed in the context of geography, the whole is seldom an ordered gathering of parts. In most departments, each specialist teaches in isolation, infrequently designing his courses in careful consideration of other departmental prerequisites or teaching his own as a logical prerequisite to other offerings. Thus an inefficient and wasteful system encourages repetition, less-than-rigorous requirements, and lack of continuity.

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[1] Carl O. Sauer, "The Education of a Geographer," *Annals*, Association of American Geographers, XLVI (September, 1956), p. 288.

Enrollments and student-teacher ratios also exert no little influence on departmental policies. Almost every geographer must agree that regional courses or specialized systematic courses (e.g., urban geography, resource management, plant geography) should optimally be organized and presented to students possessing previous training in the basics of geography. For want of better terms, these prerequisites fall in the general framework of introductory courses in physical, economic, and cultural geography. Yet, how often is this the actual case? Seldom indeed! Strengthening of the geography curriculum requires risks that most departments are unwilling to take. Few are willing to lose the enrollment, teaching assistantships, and financial backing from the college that might temporarily result from such radical action. And who is to guarantee that these losses will be only temporary? No, it is much easier to continue with high enrollment service courses which are popular and accessible to all. That the professor never has the opportunity to really challenge himself or his students can be argued away by pointing out that more students will encounter some geography than under a more rigorous prerequisite system.

This argument is, of course, specious. If introductory courses are substantive and well-presented, the presumably neglected students will flock to them. Then, in possession of fundamental geographic concepts and facts and an appreciation of geography's practical and intellectual usefulness, they will be motivated to undertake the more sophisticated upper level courses.

A Time for Curriculum Reform

It is easy enough to generalize about the geography curriculum; to implement a meaningful, foundation sequence is another matter. The current structure and organization of geography in most American colleges presents an imposing roadblock to progress. There are, however, hopeful signs. Geography in the United States is, I believe, in the midst of an intellectual and pedagogical renaissance. Suddenly the discipline has become alive with a confidence and dynamism that has been lacking for years. Sound and original work is being produced without apology; its quality is reflected in the considerable impact of American Geography on traditional European schools of geography and on other disciplines in our own country.[3] In the educational realm, serious and original attempts are being made to re-structure and upgrade geography content and instruction in the secondary schools. The already considerable progress made by the High School Geography Project is an encouraging sign.[4]

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[2] See, for example, the remarkable diversity of introductory courses listed in annual issues of the *Directory of College Geography of the United States*, Southeastern Division, The Association of American Geographers (Ed.: J.R. Schwendeman), University of Kentucky, Lexington, or Clarence F. Jones, "Status and Trends of Geography in the United States, 1952-1957," *The Professional Geographer*, XI (January, 1959), p. 7.

The time is ripe for curriculum reform in the colleges. Through the Association of American Geographers and a number of institutes sponsored by the National Science Foundation or under the National Defense Education Act, many professional geographers have had the opportunity to re-evaluate and discuss old methodologies while becoming acquainted with some of the newer techniques and concepts.[5] Also, the place and purpose of geography in undergraduate liberal education has recently been defined by one group of eminent geographers.[6] Such discussions must continue, but at the same time, we must move from professional forum to experimentation in the classroom. Course content and structure should be defined by a variety of geographers in order that we may reach a reasonable consensus, but "consensus" must not imply agreement to some watered-down version of geography that will appeal to the lowest denominator. Rather there must be a general agreement regarding the larger conceptual framework and function of the geography curriculum.

To achieve these ends, it is reasonable that we first deal with introductory courses. We should not, however, lose sight of the subsequent curriculum in the planning of these courses, nor should we ignore work being done at the secondary school level. There is an excellent possibility that future freshmen will come to our colleges possessing sound backgrounds in the fundamentals of geography.

It is my objective in the remainder of this paper to present my own views on the place, purpose, and content of introductory college geography, with particular emphasis on physical geography. I have thus far intentionally avoided discussion of physical geography per se. I cannot emphasize strongly enough that I consider myself first a geographer and secondly a person who happens to specialize in physical considerations of the geographical scene. There are geographical conceptualizations and themes which we all hold common regardless of our fields of specialization. These concepts should form our course cores. On the other hand, the role of physical geography in this scheme is important, albeit badly neglected. There is a need to restore some balance to geography by rekindling our appreciation of man-land interactions and the inseparability of the two. This is not determinism, but a simple recognition that man lives in an environment, not a vacuum. It behooves us to understand that environment in its physical as well as cultural ramifications.

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[3] See, for example, Peter Haggett's introductory comments in *Locational Analysis in Human Geography* (New York: St. Martin's Press, 1966); or note the methodologies used by the anthropoligist, G. William Skinner, in "Marketing and Social Structure in Rural China," *The Journal of Asian Studies*, XXIV (November, 1964), XXIV (February, 1965), XXIV (May, 1965); also Knut Norborg (ed.), *Proceedings of the IGU Symposium in Urban Geography* (Lund Studies in Geography. Series B., Human Geography, No. 24; Lund: Royal University of Lund, Department of Geography, 1962), p. 602.

[4] The history of this project is traced in a series of newsletters published by the High School Geography Project of the Association of American Geographers, University of Colorado, Colorado.

[5] Information regarding such institutes is regularly published in *The Professional Geographer*.

[6] Association of American Geographers, *Geography in Undergraduate Liberal Education* (A Report of the Geography in Liberal Education Project; Washington, D. C.: Association of American Geographers, 1965), p. 66.

The Nature and Scope of Introductory Geography

Introductory courses serve two primary purposes: (1) they offer basic training to students who will continue in the particular field of specialization, and (2) they provide a larger group of students with insights into the nature and methods of a body of knowledge other than their own. Insofar as the latter objective promotes communication and understanding between scholars and/or laymen, the service and liberal arts function of introductory courses is realized. Normally the organization and content of such courses will be reasonably similar from place to place – even allowing for desirable variations that may be introduced according to a particular instructor's predilections. In physics, for example, one would be surprised to encounter an introductory course that did not deal with the mechanics and properties of matter, heat, sound, magnetism, electricity, and light. Emphases and quality and method of instruction may change from institution to institution, but essential subject material remains relatively constant.

How well does geography fare in this light? Not well, I suspect. If any rational person were to undertake a survey of introductory geography offerings in the United States, he surely would be stunned and confused. In short order, he would discover that, depending on the school, "Introductory Geography" is (1) physical geography, (2) geology and geomorphology, (3) meteorology, (4) economic geography, (5) cultural geography, (6) human geography, (7) world regional geography, (8) some combination of the above, or (9) some version of the individual instructor's specialty. Furthermore, he would soon find that introductory geography (if he has figured out what it is) is taught in periods ranging from two years to one quarter. As a last resort, our thoughtful investigator might compare the structure and content of introductory offerings which bear the same title – only to encounter a disparate assortment of subject materials.

It is apparent that a system with so many inconsistencies cannot be entirely right. While it may be undesirable to chain students and their professors within a prison of intellectual conformity, there must be some acceptable limits to the permissiveness that has prevailed. In terms of physical geography, this does not seem an unreasonable goal; indeed, a consensus can perhaps be achieved more easily than in the humanly-focused areas of geography. Compared to culture, natural landscape is superficially more amenable to classification and explanation in terms of specific processes. Also, the spatial arrangements of phenomena and phenomena-producing processes are often more easily identified and mapped. Thus, both inductive and deductive methods are easily applied and demonstrated in the classroom.

Physical geography's position in the introductory sequence need not be absolutely defined. Traditionally, discussions of natural landscape precede analysis of the human scene. This generally applies to courses which survey geography as well as those in which there is a sequence of discrete introductory titles (e.g., physical geography followed by cultural geography). As long as a conceptual framework is maintained, however, there is no reason that the initial phases of a course or course-sequence should not focus on the human landscape. Experimentation in this direction is worthwhile and the "settlement theme" being developed in the High School Geography Project should prove an interesting test case.[7]

On the other hand, the importance of physical geography should not be underemphasized and a fair share of geography should be organized to that end. The twentieth century history of geography in the United States is a sad commentary on the near-demise and disenfranchisement of an integral part of a discipline. That physical geography survived at all within the structure of geography departments can be attributed to three factors: (1) the efforts of strong personalities to maintain a reasonable balance, (2) some residual recognition of the worth of physical geography by the very geographers who wished to read it out of the profession, and (3) the desire to maintain fiscal security through presentation of physical geography courses for science distribution credit. The latter tends to draw large enrollments, support several graduate students, and keep the teacher-student ratio at a level commensurate with the dean's expectations.

It is ironic that while the profession did little to encourage the training of physical geographers, and therefore lacked the proper personnel to man its physical geography courses, other geographic specialists found themselves impressed to duty and unable to devote full attention to their own interests. Instruction was bound to suffer and did. There is no reason that a competent geographer should not be able to treat natural landscape in the context of a general geography course – not if he has been properly trained. But there is a snowballing effect whereby non-physical geographers eventually end up teaching non-physical geographers to teach physical geography. The effects on American geography of these and related issues have been discussed in a number of articles, notably those by Ahnert, Bryan, Leighly, Miller, Sauer, and Thornthwaite.[8] That literature requires no review here; it speaks eloquently for itself.

The Content and Structure of Introductory Physical Geography

Physical geography has traditionally been treated as one of the so-called earth or environmental sciences and can be distinguished from other members of that community by its point-of-view. It is important that that view be clearly and positively stated at the beginning of an introductory course. It is also mandatory that we teach from that perspective throughout the course. Otherwise, we fall into the trap of presenting a series of discrete "earth science" lectures that might well have been given with greater competence and from greater experience in other departments. Historically, we have tended to do just that. Our introductory offerings at many schools could easily be described as a sequence of "Introduction to Meteorology" and "Introduction to Geology." Only in early discussions of the subject and during the treatment of cartography and climatology do we speak from a geographic position.

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[7] High School Geography Project of the Association of American Geographers, *Newsletter*, No. 9 (April, 1966).

[8] Frank Ahnert, "Some Reflections on the Place and Nature of Physical Geography in America," *The Professional Geographer*, IV (January, 1952), pp. 1-7; Kirk Bryan, "Physical Geography in the Training of the Geographer," *Annals*, Association of American Geographers, XXXIII (September, 1944), pp. 183-89, and "The Place of Geomorphology in the Geographic Sciences," *Annals*, Association of American Geographers, XLV (December, 1955), pp. 309-18; David H. Miller, "Geography, Physical and Unified," *The Professional Geographer*, XVII (March, 1965), pp. 1-4; Carl O. Sauer, "Foreward to Historical Geography," *Annals*, Association of American Geographers, XXXI (March, 1941), pp. 1-24; C. W. Thornthwaite, "The Task Ahead," *Annals*, Association of American Geographers, LI (December, 1961), pp. 345-56.

One probable reason for this instructional pattern lies in the fact that it is easier to handle one subject at a time than to work at a constant theme which emphasizes interaction and integration. It can even be argued that one cannot properly speak of the whole landscape until mastery of its individual components is demonstrated. While this may be partially true, there is nothing to prevent us from continuously introducing spatial attributes of the processes and/or phenomena under discussion. Also, if we are speaking of a single circulation system, we can treat that subject in detail while drawing inferences regarding its spatial interaction with other systems. If the planetary energy system were under discussion, for example, some mention should be made of distortions in its latitudinal orientation by atmospheric and hydrospheric circulation systems. The student might not yet have a sophisticated understanding of the latter processes, but he would from the beginning appreciate that the planetary energy system is not an isolated phenomenon responding to isolated processes. In short, he would have begun to understand landscape formation as the manifestation of complex and reciprocally interacting processes. As his detailed knowledge of the individual environmental sub-systems is developed, he is able to receive and comprehend instruction at an increasing level of geographic sophistication.

If such a theme is to be successfully developed, the burden is essentially the instructor's. Current textbooks are for the most part organized on a subject-by-subject basis; only in occasional chapters are truly geographic statements presented. Thus the student—who is inclined to look to his textbook as an unerring Authority—is pulled towards an elements approach. The instructor must balance this in his lectures and through judicious use of outside readings. I would further suggest that early in the course it is incumbent on the instructor to indicate (if only in asides) that human systems are part of the larger environment. Again using the example of energy, it can be shown that the energy flux at the earth's surface has been altered by man's activities and that this often is related to his technological attainments. Why not digress for a minute or two to cite examples such as temperature differentials or variations in infrared imagery over the continuum between a large Central Business District and the outlying rural countryside? Surely the lesson will be geographically enhanced by this approach. Later, as the course develops and is concerned with a greater number of interface phenomena such as soils or vegetation, opportunities whereby man may be included as an important earth-shaping agent will increase, and more instructional time may be devoted to the subject.

Physical Geography Defined

There have been many definitions of geography and physical geography, however, three recent statements summarize physical geography and its methodologies adequately, and in my opinion, save recourse to the earlier literature.[9] They are S. V. Kalesnik's paper on "General Regularities of the Earth," M. Gordon Wolman's position paper on "Physical Geography in the Liberal Arts," and pertinent sections in the thought-provoking The Science of Geography.[10] Although one might take exception with certain points in each of these articles, they do express the essence of physical geography.[11] Paragraphs from two of the papers warrant quotation at length:

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[9] The definitions offered here are of course an outgrowth of the earlier literature. It would be inefficient to site all of that literature, but some of the standard references are: Edward A. Ackerman, *Geography as a Fundamental Research Discipline* (Department of Geography Research Paper No. 53; Chicago: University of Chicago, 1958); R. E. Dickinson

> Physical geography is the study of the distinctive characteristics of the state and development of the landscape envelope of the earth. By landscape envelope is meant the surface of the globe as the scene of complex and reciprocally interacting atmosphere, hydrosphere, and lithosphere, as the surface on which energy from the sun is received and absorbed, as the locale in which the actions of water, wind, and ice take place with the formation of sedimentary rocks, as the plane on which soil is formed, and as the home of plant and animal life. The landscape envelope is an interrelated system with specific combinations of relief, lithic structure, air masses, water vapor, ocean and lake basins, soils, and living organisms. . . Individually and in combinations, features within this relatively thin surface envelope display marked areal variation.[12]

> Physical geography places particular stress upon the system relations among air, water, soil, and biota, upon their distribution into space, and upon their relation to man. The analysis of the complex relations is made manageable because processes involving air and water can often be modeled as closed systems. Where such systems can be recognized, the conditions or state of the system may be measured in terms of temperature, available moisture, organic material, landform change, or other parameters. If the system is cyclical, like the hydrologic cycle, or if it approaches a steady state as in

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and O. J. R. Howarth, *The Making of Geography* (London: Oxford University Press, 1933); Richard Hartshorne, "The Nature of Geography," *Annals*, Association of American Geographers, XXIX (September and December, 1939), pp. 171-645, and *Perspective on The Nature of Geography* (Association of American Geographers Monograph Series; Chicago: Rand McNally, 1959); Preston E. James and Clarence F. Jones (eds.), *American Geography; Inventory and Prospect* (Syracuse: University of Syracuse Press, 1954); S. W. Wooldridge, *The Geographer as Scientist* (London: Thomas Nelson and Sons, 1956); S. W. Wooldridge and W. Gordon East, *The Spirit and Purpose of Geography* (London: Hutchinson's University Library, 1951).

[10] S. V. Kalesnik, "General Geographic Regularities of the Earth," *Annals*, Association of American Geographers, LIV (March, 1964), pp. 160-64; M. Gordon Wolman, "Physical Geography in the Liberal Arts," *Geography in Undergraduate Liberal Education* (A Report of the Geography in Liberal Education Project; Washington, D. C.: Association of American Geographers, 1965), pp. 48-54; National Academy of Sciences-National Research Council, *The Science of Geography*. (Report of the Ad Hoc Committee on Geography, Earth Sciences Division, National Academy of Sciences-National Research Council, Publication 1277; Washington, D. C.: National Academy of Sciences-National Research Council, 1965).

[11] For example, Kalesnik, although he gives lip service to organic life as a component of the landscape envelope, essentially ignores man as an agent nor does he explicitly include him in his definition of geography.

[12] Kalesnik, op. cit., p. 160.

> some river channels, the special role of man in the environment may often be appraised by measuring sequential changes in these parameters. Such changes may be associated with historical changes in land use and development or they may be induced by artificial manipulation of the existing environment. Thus, concepts of the interrelation of many elements in the environment, their distribution in space, and their behavior as systems provide fundamental bases for physical geographic study. They are logical beginnings for an understanding of the man-environment system.[13]

Thus physical geography (and geography, I think) is seen as the study of the earth ecosystem in terms of its sub-systems and their spatial and temporal attributes. Basic to an understanding of the ecosystem is the fact that energy flows through it and can be defined in terms of circulation, cyclical and periodic rhythms, and interdependency of processes. If the semantical and operational resemblance to ecology is strong, I see no objection. The ecologists' definitions of habitat and community as an interacting unit (i.e., ecosystem) is well worth borrowing.[14]

One final comment on definitions seems unavoidable. The Science of Geography has in a short time generated thoughtful debate and will continue, no doubt, to stimulate discussion among geographers.[15] I have indicated my general agreement with those sections which attempt to define and explain physical geography. They are excellent statements which in no way abrogate the historical meaning of physical geography or the worth of contributions by earlier generations of physical geographers. In fact, as we move towards what Borchert calls "an increasingly unified geography," it appears that we are returning to the traditions exemplified progressively by Humboldt, Ratzel, and Sauer.[16] It is true that the terminology is changing and that expressions such as "systems-analysis" have been overworked of late, but "system" is a good word, it is not in itself jargon, and there is no reason to reject it because of its current popularity. Circulation patterns and flows, which can be described systematically, do exist in nature and are worthy of description and explanation. It follows, as James has suggested, that

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13. *The Science of Geography*, *op. cit.*, pp. 14-15.

14. See, for example, discussions in W. B. Morgan and R. P. Moss, "Geography and Ecology: The Concept of the Community and its Relationship to Environment," *Annals*, Association of American Geography, LV (June, 1965), pp. 39-50; and Victor E. Shelford, *The Ecology of North America* (Urbana: University of Illinois Press, 1963), pp. 1-16.

15. Preston E. James, Review of *The Science of Geography*, *Geographical Review*, LVI (January, 1966), pp. 127-29; William McKinney, Letter to *The Professional Geographer*, XVII (March, 1966), p. 111; Report, Ad Hoc Committee on Geography, National Academy of Sciences-National Research Council on *The Science of Geography*, "The President's Session, Annual Meeting of the Association of American Geographers, April 20, 1965." *The Professional Geographer*, XVII (July, 1965), pp. 30-37; Richard S. Thoman, "Some Comments on *The Science of Geography*," *The Professional Geographer*, XVII (November, 1965), pp. 8-10.

16. I refer here to Sauer in the period after "The Morphology of Landscape." Leighly in writing his introduction to Sauer's book, *Land and Life*, remarks that Sauer "had outgrown his temporary inclination to define geography by setting narrow limits to it." Carl O. Sauer, *Land and Life* (Berkeley: University of California Press, 1963), p. 6.

empirical-inductive and theoretical-deductive methods are both useful in attaining these ends.[17]

Course Content and Structure

The content and structure of introductory physical geography will be influenced by local institutional policies such as length of term, number of terms in the sequence, and the relationship of the geography program to college-wide curriculum objectives. Also, whether physical geography is presented as an integral part of an introductory survey course (e.g., "principles of geography," "world regional geography," etc.) or as an independent offering will affect the make-up of the course. Finally, and perhaps most importantly, each professor must have the freedom to operate creatively and imaginatively. I cannot, therefore, recommend absolute standardization of content and structure: it is an inhibiting and undesirable practice. On the other hand, I do strongly suggest the advisability of adherence to a clearly-stated geographic theme and attitude. I would hope that my preceding statements include some measure of that theme and might be shared by other physical geographers.

In the context of the geographical theme, certain fundamental concepts and facts which help to describe and explain environment should probably be incorporated in every course. Some which should be included, in my opinion, are listed and briefly discussed in following paragraphs. The degree of detail and sophistication with which they are treated will, of course, depend on local circumstances, secondary school experience of the students and the character of prerequisite college geography courses that may have been required. In some cases, it may be desirable to eliminate certain materials, or alternatively, present a more rigorous treatment. My own experience has been colored by the advantages of teaching one-year introductory physical geography courses, but when faced with one-semester courses in institute and extension situations, I have found that the essential conceptual base can be retained. I suspect that this is also true if physical geography must be included as only one part of an introductory one-term offering.

Important Concepts and Subject Materials

In addition to the suggested topics given below, an appendix, which presents the lecture, laboratory, and reading schedule for the one-year Introductory Physical Geography course as it is presently given at the University of Michigan, was included for discussion at the Institute presentation.[18] The schedule represented two fourteen-week terms under the trimester system.

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17. James, op. cit., p. 128.

18. The appendix is not included with this published version of the Position Paper, however. I would be pleased to provide copies to anyone requesting them. The response of many Institute Participants to the course outline was considerably less than favorable. They pointed out—and quite accurately—that the outline of the course did not look terribly original to them; that is, that it suggested the same old subjects that physical geographers have been teaching for years. I couldn't agree more. I believe that the subject matter of physical geography today is roughly the same as it was fifty years ago and as it will be fifty years from now. What has changed and will change, as it does in all sciences, is the understanding and methodology that we bring to our subject. The burden falls, as usual, on the instructor and the textbook writer to insure that the point-of-view is a viable one.

Explicit in the schedule was an effort to keep lectures, textbook assignments, and outside readings interrelated but separate. If a subject is well stated in the textbook, there is no reason for the instructor to reiterate the material except insofar as amplification is required. I have only recently begun to introduce outside readings into introductory courses. In this respect, it is gratifying to find—although I have been slow to learn this—that students will rise to any reasonably presented challenge. Increased rigor and workload does not disturb students, it disturbs the instructor.

Dimension, measurement, and location.—An understanding of the form and dimensions of the earth is essential to presentation of geographical concepts. The subject is so obvious we incorrectly assume that the student has learned the material previously and often neglect it. Exposure to subject and learning are different things. It has been my experience that although the students think that they understand the form of the earth and measurements on its surface, they are actually quite naive in this respect. Some elementary discussion and exercises which reintroduce geometric and trigonometric principles is useful. Most of this material can be presented in laboratory sessions and includes problems of scale, grid coordinates, earth geometry, measurement, and triangulation. Concepts of time and seasonality are important at this stage. Traditional treatment should be blended with some of the less familiar questions such as those suggested by Bunge and by Boyce and Clark.[19]

Projections and Maps.—Maps are often described as the geographers' principle medium for analysis and demonstration of the spatial and inter-associative attributes of processes and phenomena. But the map is only a representation of selected characteristics of the environment and it is presented on a grid base transformed from reality. To properly understand, use, and appreciate maps, the student must be familiar with the methods and underlying principles whereby it is possible with projections to transform and distort that reality. A close relationship exists between this and the preceding section and it is again advisable to include practical exercises. In my own course, I include projection construction, planimetric mapping from field measurements and triangulation, and profile mapping. Isarythmic mapping is later introduced in the context of climate and landform studies.

Energy, momentum, and moisture.—C. W. Thornthwaite, in his 1961 Presidential Address to the Association of American Geographers, clearly defined and summarized the importance of this subject to geography.[20] The need to understand the interrelationship and interdependency of energy, moisture, and momentum fluxes is primary to physical geography. If such associations and processes are understood, then it is possible to speak meaningfully of geomorphic, edaphic and biotic processes at the interface and their areal distributions. Therein are the basic flows and patterns by which we seek to explain circulation in the variety of subsystems which constitute our environment: planetary wind and pressure, ocean currents, and the hydrological cycle—this latter to include atmospheric moisture, soil moisture and the water balance, ground water, surface water in streams and lakes, glacierization and the ephemeral snow cover. This is a core subject of geography and it deserves detailed and rigorous treatment.

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19. William W. Bunge, *Theoretical Geography* (Lund Studies in Geography, Series C., General and Mathematical Geography, No. 1; Lund: Royal University of Lund, Department of Geography, 1962); and Ronald R. Boyce and W. A. V. Clark, "The Concept of Shape in Geography," *The Geographical Review*, LIV (October, 1964), pp. 561-72.

20. Thornthwaite, *op. cit.*

In a sense, this is the traditional stuff of physical geography, but the energy-moisture systems approach is more effectively explanatory in leading towards understanding of landscape differentiation. Unfortunately, the number of departments staffed by faculty familiar with the approach is still small. This is partly due to the lack of physical geographic training available in the institutions offering graduate work. However, there is also a tendency to avoid the abundant literature on the subject because of its mathematical and quantitative implications.[21] Although it is true that a specialist should have training along these lines, the fundamental concepts are neither frightening nor incomprehensible. Geography would profit if more professionals familiarized themselves with this facet of the discipline; it is particularly meaningful when carried over into problems of human geography such as agriculture, water resources and management, and regional development.

Regional Climatology.—Geographers, through the regional differentiation of climate, provide a technique and synthesis most useful in the understanding of natural and human landscapes. There are both educational and analytical values in such regionalization. Three key subjects should be covered in an introductory course: (1) an exposition of the principal controls of climate, that is, how energy, moisture, and momentum are influenced by latitude, land and water relationships, topography, surface condition, altitude, and man; (2) discussion of the methods of climatic classification with emphasis on the many variations which are possible; and (3) delineation of world climate regions in terms of their location, characteristics, controls, and relations to soil, vegetation, and human activity. Any valid classification that satisfies the instructor and the calendar can be used. I prefer my own altered version of Strahler's classes and encourage students who will continue in geography to be familiar with the Koeppen system as an expedient to reading the literature.[22]

Geomorphology.—Although this is historically the original subject matter of physical geography, I find it a difficult subject to organize in the context of an introductory physical geography course. This is because of a reluctance to overlap with geology any more than necessary, yet unless physical geology is prerequisite to physical geography, certain concepts and facts must be taught. How, for example, is it possible to discuss weathering and soil forming processes if the student has no knowledge of minerals and rocks and their properties, or to explain the characteristics of a physiographic province to a student with little background in processes of diastrophism and structure? Overlap is obviously necessary, but efforts should be made to minimize it.

I develop my discussions of landforms in the broadest Penckian terms of opposing energy flows—the endogenic and exogenic forces which do battle at the interface. Processes such as vulcanism, folding, and faulting are described as briefly as possible and emphasis is given to their resultant morphology and areal distribution. External processes—weathering, mass wasting, and work of wind, water, and ice—receive the lion's share of attention. Spatial variations in these processes and associated landforms are closely related to climate and the major physiographic provinces of North America are discussed. Features outside of the North American continent are also included as time permits.

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[21] David H. Miller has recently published a most comprehensive and excellent review of these materials. Included is a 25-page bibliography with 535 entries. "The Heat and Water Budget of the Earth's Surface." *Advances in Geophysics* eds. H. E. Landsberg and J. Van Mieghen, XI (New York and London: Academic Press, 1965), pp. 175-302

[22] Arthur N. Strahler, *Physical Geography* (New York: John Wiley and Sons, Inc., 1960), pp. 181-235.

The rapidly moving academic calendar becomes a problem here, but I find that I am increasingly inclined to devote classroom time to classical questions of landscape evolution. As most geographers, I have been too willing to lean on Davisian geomorphology, but the concepts of Hack, King, Walther Penck, and others deserve equal attention.[23] Davis' closed system presents pedagogical as well as theoretical problems. As Chorley has stated:

> "....open-system thinking directs the investigator toward the essential multivariate character of geomorphic phenomena. It is of interest to note that the physical, and the resulting psychological inability of geographers to handle successfully the simultaneous operation of a number of causes contributing to a given effect has been one of the greatest impediments to the advancement of their discipline. This inability has prompted, at worst, a unicausal determinism and, at best, an unrealistic concentration upon one or two contributing factors at the expense of others. Davis' preoccupation with "stage" in geomorphology has been paralleled, for example, by an undue emphasis on the part of some economic geographers upon the factor of 'distance' in many analyses of economic location."[24]

If discussion of these matters must be limited, it is still preferable that the student is exposed to controversy, however briefly, rather than be left poorly conditioned to a single untenable theory.

Slides and field trips are especially valuable in this phase of the course. The typical student is not very familiar with landscape, at least from the geographer's perspective, and should be given an opportunity to view environment in the light of his recent training. Also, he requires some instruction in the use of analytical tools such as the topographic map and aerial photographs. Exercises should be constructed to include both inductive and deductive methodologies.

Soils and Vegetation. – Soils and vegetation are the quintessent response to interacting processes within the ecosystem. Variations in their properties, form, and distribution mirror the effects of a complex set of energy systems focused at the earth's surface. On continental scales, we generalize their occurrence in relation to broadly defined circulation patterns, yet in local settings, the diversity of soils and vegetation is as varied as the micro-scaled factors of climate, topography, drainage, and lithology; in turn, soils and vegetation are dependent and exert influence over the environmental factors which influence them. Their impact on man's activities is appreciable and man has significantly altered the world's soil and plant cover. It is logical that the geography of soils and vegetation should be a principal focus of the lecturer's attention just as those elements are a focus of nature's activity.

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[23] Some appropriate references are: J. T. Hack, "Interpretation of Erosional Topography in Humid-Temperate Regions," *American Journal of Science*, CCLVIII-A (1960), pp. 80-97; Lester C. King, "Canons of Landscape Evolution," *Bulletin of the Geological Society of America*, LXIV (1953), pp. 721-52; Walther Penck, *Morphological Analysis of Landforms* (London: MacMillan, 1953), (translation of 1927 edition).

[24] Richard J. Corley, *Geomorphology and General Systems Theory* (Geological Survey Professional Paper 500-B; Washington, D.C.: United States Government Printing Office, 1962), pp. 6-7. Further useful comments on the advantages of open systems can be found in Luna B. Leopold and Walter B. Langbein, *The Concept of Entropy in Landscape Evolution* (Geological Survey Professional Paper 500-A; Washington, D.C.: United States Government Printing Office, 1962).

In this case, I believe that the instructor should go well beyond the physical treatment of properties and formation. Here is an opportunity to introduce discussion of diffusion, intensive and extensive agriculture, watershed management, and similar problems which concern the geographer. There are, after all, few places on the face of the inhabitated or uninhabitated earth where the mark of man has not affected soils and vegetation.

Other Considerations

The subjects described above have been sketched only roughly. I have not attempted to spell out the particulars of instruction or amplify upon individual subjects familiar to geographers (e.g., hydrological cycle, soil-forming processes, etc.). This is properly each instructor's prerogative and problem. Also, I do not pretend that the suggested categories are necessarily the best combination or the only combination. What is represented is the current stage of my own evolution as a geographer and teacher of geography.

One area in which further course changes might be anticipated is in respect to the significant work being done by geographers interested in the perception of environment and its associated role in decision-making processes.[25] Although some of this material is presented in my lectures, it has not been formalized within the course structure. The subject is, however, particularly geographical and deserves serious consideration as an instructional unit which focuses on the man-environment relationship.

There has been an emphasis in this paper on the need for a geographic approach in the teaching of physical geography. It is useful to make this point in the classroom not only by definition, but through the exposition of actual geographical problems, the method by which they are researched, and the conclusions reached. These presentations can be made in a fairly unsophisticated manner early in the course and will give the student some "feel" for geography. At the end of the course, when the student has received detailed training in the elements and concepts, the same problem sequence can be presented with greater sophistication. The variety of problems available is limitless, but it is suggested that at least one of them should come from the instructor's own experience so that he may use available visual aids and impart his own enthusiasm.

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[25] Recently, studies of perception of environmental hazards have been most prominent in the geographical literature. See, for example, Ian Burton and Robert W. Kates, "The Floodplain and the Seashore," *The Geographical Review* LIV (July, 1964), pp. 366-385; Ian Burton, Robert W. Kates, John R. Mather, and Rodman E. Snead, *The Shores of Megalopolis: Coastal Occupance and Human Adjustment to Flood Hazard* (Publications in Climatology, Laboratory of Climatology, XVIII, No. 3; Elmer, New Jersey, 1965), pp. 435-603; Robert W. Kates, *Hazard and Choice Perception in Flood Plain Management* (Department of Geography Research Paper No. 78; Chicago: The University of Chicago, 1962); and Gilbert F. White, *Human Adjustment to Floods* (Department of Geography Research Paper No. 29; Chicago: The University of Chicago, 1945). See also Alexander Spoehr, "Cultural Differences in the Interpretation of Natural Resources," *Man's Role in Changing the Face of the Earth*, ed. William L. Thomas Jr., (Chicago: University of Chicago Press, 1956), pp. 93-102.

Epilogue

The major premise of this paper – that we must instruct from a uniquely geographical perspective – has not been fully supported in the suggested structure for introductory physical geography. It is obvious that subject materials within the course are oriented strongly to the land aspect of the man-land relationship. This is as it should be within the context of the course title and its function; i.e., to teach the fundamentals of physical geography. The instructor must bear the burden for creating a geographical mood, but he cannot neglect the basic natural principles if we are to build a proper foundation in physical geography. What then is the solution? I would suggest that the answer lies in the prerequisite system of instruction. Specialized introductory courses in physical and human geography should follow a general Introduction to Geography. This prerequisite offering would establish the larger meaning of geography and establish attitudes that would be carried into the specialized introductory courses. These, in turn, would be prerequisite to upper level courses, and administrative and educational logic whereby the prerequisite method is rejected in geography can be overcome. If necessary, special courses should be created (as they are in other disciplines) to accommodate the education major who must take one course in Conservation and Resource Management or the Area Center student with certain regional requirements, but let us not dilute the entire geography curriculum.

Needless to say, the primary introductory course is the most challenging instructional task of all. We are asking the professor to present a reasonable amalgam of physical and human processes and interactions in a spatial framework. Does this require a "super-geographer"? I think not. What it does require is a properly-trained geographer, and at the risk of appearing chauvinistic, it does seem that geographers are not receiving sufficient training in physical geography. One year of physical training does not equip an economic geographer to step into an introductory course and do justice to natural landscape anymore than the converse would work with a physical geographer. If it is the geographer's fate to expend extra effort and time insuring his proficiency generally as well as specifically, it should be remembered that that is what geography is all about.

THE ROLE OF CLIMATE
IN THE INTRODUCTORY PHYSICAL GEOGRAPHY COURSE

Douglas B. Carter

If there ever was a great course, it is Introductory Physical Geography. Has any other course done so much for departments of geography? For years it has paid the bills and maintained a cadre of graduate assistants and staff so the remainder of the departments could do what they would like to do. It has been an enrollment maker and often it is the cultural and economic geographer's only justification for calling themselves trained in the land aspect of man-land relationships. It is the substitute for physical science courses in many an undergraduate's curriculum. It has sold a lot of textbooks by geographers.

Any course which is such a grand old institution probably ought to be left alone in dignity. Yet, there is need for speaking out–physical geography is not taught in some good colleges and universities even though some versions of the course could meet the most scrupulous philosophical requirements of a curriculum committee. On the other hand, physical geography is often taught as a rigorless language to students who have heard most of it previously from a Walt Disney employee. This latter educational experience is not very admirable practically and philosophically. It may consist merely of selected introductory views of a half dozen natural sciences which may be better taught in the separate science departments. Students may gain from such a course few if any skills, experience hardly any controversy, and may be engaged in little else than memorization of definitions and descriptions. When physical geography is thus conducted, it probably deserves no hearing in any college or university. Physical geography is not the only course which suffers these difficulties.

The position which we take here can be encompassed by three questions: (1) What is the opportunity for Introductory Physical Geography? (2) How has Physical Geography missed the opportunity? and (3) How could it be? We shall direct our attention primarily to the role of climate in the Introductory course in Physical Geography. Climate offers a good example of the seemingly limitless, static description and encyclopedic terminology which students must endure. It also offers an example of ways in which the grand old course could be structured more coherently.

What Is the Opportunity for Introductory Physical Geography?

There is an opportunity for physical geography by virtue of the fact that it is already in the curriculum of many institutions, because it is already taught acceptably and because the opportunity is virtually "automatic" where it is assumed the faculty and the discipline will provide philosophic directions for the course which need not be questioned–especially if the students don't complain too much.

There is another opportunity for physical geography where the courses in the curriculum are inspected periodically for their educational goals, where the effectiveness of basic theories is critically reviewed in regard to the structure of knowledge which any course presents. You may recognize these two opportunities by some colloquial names. For example, the first opportunity might be called the "anything goes" course opportunity; it is the situation at "other" institutions, not our own. The second opportunity is the "rigorous" course opportunity: it is what we are striving for in our own departments and haven't quite attained, usually.

In calling your attention to these contrasting situations, it is not my purpose to embarrass anyone; rather, it is done to emphasize the different circumstances. Let us assume the "anything goes" course is provincial: the "rigorous" course, then, is the one which spells out the opportunity that would meet universal requirements.

Pedagogic Goals

In order to qualify as a "rigorous" course in a Liberal Arts context, strictly considered, the course should be capable of presenting to students a theoretical structure for the knowledge it surveys which makes the details more manageable and brings some additional order out of the confusion of detail. This usually means the student will focus on principles by which he can reason from some knowledge the probable character of other knowledge. In other words, the Liberal Arts are concerned with the kind of reasoning which eschews the *unique*, and prizes the structure of knowledge which can be transferred usefully to situations new to the student.

Geography in Undergraduate Liberal Education[1] is a report of a committee of the Association of American Geographers which reflects some of the contrasts in goals and opportunities that exist for physical geography in the curriculum. In the first article, the unsigned report of the whole committee, there is support for the proposition that any geography course is naturally a Liberal Arts activity. The second article, by Gilbert F. White,[2] offers no support at all for the "anything goes" course. This dichotomy has not stirred many geographers to comment but it points out that some of us may accept or confuse the "automatic" opportunity's easy goals with the need to demonstrate a theoretical structure for our courses. Explicitly, physical geography should present students with methodology for reasoning about the knowledge it embraces; there should be some opportunity to apply the methodology and thereby gain insights which liberate the student's intellectual individuality.

Theoretical Structure

Introductory Physical Geography appeals to some on the grounds that it introduces a number of physical science disciplines: physical geography, thus, is an "integrating" discipline. This is an unsupportable position: if geographers are so gifted with regard to physical science, why not ask them to give just one big course and call it an education in one dose?

Introductory Physical Geography purports to study the world—from the point of view that *position*, or place, affects the regularity of those processes which determine the quality or condition of materials at the interface between air and land or air and water. Place or location thus implies a *potential environment* against which the stability of unique conditions may be assessed and the opportunities for manipulation or management may be evaluated. What we declare to the student is that the world is orderly, in a certain sense: the order which can be found is there because of the expectable behavior of a limited number of processes whose intensity, etc., are conditioned by the location of the place; by studying these conditions, the student not only will learn a description of the earth but will acquire a methodology for judging the probable effect of these environmental processes on altered conditions of some particular place: these are significant matters because they involve the security of humankind whose sustenance, and resources depend upon the maintenance of some semblance of the order dominating the earth's surface.

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[1] *Geography in Undergraduate Liberal Education* (A Report of the Geography in Liberal Education of Project; Washington, D.C.: Association of American Geographers, (1965).

[2] Gilbert F. White, "Geography in Liberal Education," *ibid.* pp. 13-24.

That Which is Introduced by Introductory Physical Geography

The course must consider the opportunity to serve what courses are to follow. The majority of students may well be interested in Introductory Physical Geography as a single experience for which they have no further commitment. Geography majors should get some insights to specialized courses of instruction from the course. Actually, most "advanced" courses in geography are autonomous: instructors whose clientele is composed of graduate students or upper division students generally design their courses so there is little use of the introductory work. Thus, seniors frequently sit in "advanced" courses, seminars, or reading courses without any previous training in geography. There is a substantial foundation for the proposition that physical geography leads nowhere in the geography curriculum; the fault is not so much the character of the course as it is the libertine attitudes toward rigor and preparation which prevail.

How Has Introductory Physical Geography Missed Its Opportunity?

The "rigorous" courses of physical geography which are so marvelously structured are difficult to find in reality. Consequently, one must resort to the textbooks as examples of the real physical geography which is taught in our colleges and universities. The most shocking fact about our textbooks is that they offer little example of a structured knowledge. Are they books about the world? Are they books about the significance of terrestrial processes at particular places? I believe our texts and courses in physical geography have made almost an abstraction of place. Place has been reduced to an attribute which identifies some underlined term: Devil's Post Pile identifies columnar structure in extrusive igneous rocks while Verkhoyansk, Cherrapunji and Azizia serve their special function at examination time. None of these places is ever studied for its own sake—as a place or part of a significant type of territory.

Looking at textbooks of physical geography, especially the most recent ones, has convinced me that the "anything goes" course must be predominant. The textbooks aren't concerned with the world as a first objective. They are examples of the organization necessary to present geography as the "integrating science"—a spurious goal. There is an order to the topics which varies only slightly: climate always precedes vegetation or soil. This is difficult to justify since none of the underlined climatic terms is necessary to understand the underlined words in soils or vegetation sections. In all the texts I have reviewed, the vegetation pattern is the basis of the climatic regions. Why, then, is vegetation not treated before climate? Moreover, weather is discussed underline by underline, emphasizing atmospheric movement; there follows, in every textbook I've seen, a regionalization of climate which is based on vegetation patterns. These employ temperature values so obscure they didn't merit earlier mention and a ratio of precipitation to evapotranspiration, estimated by certain temperatures.[3] Why should the vegetation-based climate regions bear any relation to a momentum-oriented discussion of weather?

These are rather specific criticisms, and they may deserve some rebuttal, but they illustrate the point I wish to make: physical geography texts – and courses too, we may presume – are organized in ways which do not lend themselves to problem-solving and speculation as part of the development of the course materials. Instead, each major subject is presented in isolation. The connective structure of topics is rarely apparent and certainly is not an object of the course; it can't be underlined.

I'll belabor the point further. Physical geography texts (and courses) are encyclopedic. They contain too many underlined entries; in fact, they rival the number of vocabulary items presented in some language courses. Moreover, they have driven nearly the whole of the subject into the same mold. Processes have become a vehicle for introducing half a dozen underlined or italicized words. The process is a definite sequential ordering of general, rather than unique, events (compare "process" in cultural geography) which also is an object of definition and memorization. Thus, the student learns the features of the podzolization process or the hydrologic cycle but he solves no riddles and makes no recommendations by using these processes.

One of the greatest deficiencies of physical geography is the presentation of classifications. There is little honesty about climatic classification. How many texts make it clear that the regions shown are actually vegetation provinces with some convenient climatic numbers fitted to the limits? None explains that this is the reason that either the map or else the arbitrary criteria must be committed to memory. The map and the formulae are sacred; only heretics ask that we establish systematic criteria and develop a map from sound principles.

Classifications are not used in physical geography texts to determine what factor to apply to a process in order to estimate some outcome. They are not functional classifications. Instead, classifications are made into objects for underlining and memorization of definitions. Unfortunately, what ought to be an analytical tool is corrupted to descriptive purposes, alone. Instead of making a hunter out of the student, these classifications make him a gun collector.

There is no doubt the full opportunity for the intellectual challenge of physical geography has been missed to some degree. I hope our teachers have better structures in mind than the textbooks suggest. Otherwise, Dr. Conant deserves more sympathetic understanding than geographers have accorded him.

Another major opportunity is strangely set aside by textbooks though teachers undoubtedly exploit it effectively. This opportunity is the study of a "situation" which affects society. An issue of public policy may suffice. Alternatively, the development problems associated with the use of some resource whose quality depends upon the environment in a particular place serves as an example. With such devices, the student can speculate about alternative outcomes or objectives for plans. There is investigation and speculation here even if it lacks "rigor." The problem of the author is to present all the underlined words he knows and their distributions on maps; how can he hope to find space to ramble on over issues? The preoccupation with the rat-a-tat-tat definitions of too many underlined terms has given physical geography texts a predilection for exclusively physical features. There is no reason to exclude economic or cultural attributes of phenomena which have a clear-cut physical dependence. The problem of frost protection, the criteria of irrigation practices, the hazards of flood and the effects of fire protection on vegetation are examples of physical phenomena with cultural and economic attributes. Introductory Physical Geography courses appear to have avoided studiously and consistently these rich fields. It is not possible to support the proposition that physical geography should exclude such problems while economic or cultural geography should include them. Physical geography is involved in these questions but the Introductory Physical Geography we teach has become so stylized that it ignores the attractive issues of the rational use of environmental elements as resources. Should physical geography seek a structure which offers a possibility both for understanding the physical systems which operate on the surface and for appraising the environment as a resource in some programs which develop resources? How could it be—this Introductory Physical Geography?

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[3] That the temperature formulae in climatic classifications are estimates of evapotranspiration escapes underlining.

How Could It Be?

Some strategies can help to make physical geography more compatible with the goals of the purist's Liberal Arts than the texts have provided. In the remainder of this paper some examples of strategies will be given but there is no attempt here to provide a complete restructuring of the Introductory Physical Geography course. The examples are not exhaustive of the types of innovations since we deal here only with the role of climate in this task.

Model-building has some antecedents in physical geography but the usual experience with models in physical geography texts is the same experience I have complained about earlier... models are made into objects to be admired, memorized, appreciated, collected, etc. They aren't put to use in the majority of texts. The example we shall explore is the moisture budget or water balance, a special part of the larger energy-moisture economy. Thornthwaite's simplified water balance has been introduced in nearly all texts to demonstrate the income, outgo and storage of moisture at a place. Its impact in virtually all texts is to produce a few new underlined terms to memorize rather than to compute the basis of a decision-making situation. The same thing is true of the model of the hydrologic cycle, landform models, even the stochastic models of frequency of frost, etc. The use of Thornthwaite's water balance to describe the interrelation of features of merely encyclopedic interest is so contrasted with the uses made of the model by Thornthwaite and Thornthwaite Associates, Inc., that it is utterly astonishing. How could it be? The water balance could be employed to describe one of the fundamental qualities of a place and to instruct students in the manipulation of environment.

Two of the water balance features are imposed externally—an energy supply and a moisture supply. These are acquired as a result of certain circulation features which may be regarded, in some part of Introductory Physical Geography as a steady-state endowment. One major focus in climate study is to view the atmospheric proceedings from the vista of the steady-state concept. It is probably the dominant viewpoint in climatology; however, is it the only context in which the water balance may be viewed? The steady-state idea serves as an excellent integrating device for a host of processes which are active in the physical landscape.

The steady-state climate produces an energy and a moisture supply which are the legacies or endowment of places. Each place on land is so distinguished. Adopting this view of climate, it is evident that several processes of the landscape are activated by the energy and moisture resources of the place. If it were possible to identify several regions in which the energy of one region were a multiple of the energy of another region, or the moisture adequacy of one were a definite proportion of the moisture adequacy of another, it would be possible to use these regions to evaluate quantitatively those processes of the landscape which depend upon the climate for energy and moisture. A classification of climate on this basis provides at once a pattern which is not derived from soils, vegetation, water resources, agriculture or other consideration. However, this pattern provides a standard by which the patterns of distribution of the steady-state processes of soils, vegetation, water resources and agricultural systems can be anticipated and rated. That this is so, stems from the fact the steady-state processes of the environment are dependent only upon those climatic factors on which the climatic regions are based.

With the water balance data he has manipulated, the student can assess some fundamental questions: How many climates are there? Where should the climatic regions be located? Which climates are dry and which are moist? He need not stare at some sacred map and commit to memory an esoteric initial equivalent to some unexplainable climatic value. This student can make his own classification of climate, justify his criteria and construct a map of meaningful regions each of which is related in some regular way to other regions. Moreover, his procedures can be shown to have been the intent of such sophisticated thinkers as Penck, Koeppen and Thornthwaite. Moreover, his climatic regions map is only the first step in manipulating the water balance and the first use of the basic pattern which has causal relations for other phenomena.

Soils are made different both physically and chemically by the energy and moisture qualities of a place. The water balance is an accounting of the energy and moisture exchanges through the seasons so the behavior of the soil for tractionability may be assessed as a manipulative exercise. The student may study the soil moisture deficiencies, storages, and excesses through the year for some interesting place such as Southeast Asia. The steady-state example is useful for strategic planning of the tractionability of the natural surface. Analysis of tractionability conditions from a water balance for actual weather records demonstrates the problem for tactical planning.

The description of nutrient storage and availability and the relation of chemical properties of one soil to another is enormously facilitated by stressing the quantitative role of the water balance in these processes. The student's map of climate regions becomes a means of anticipating the distribution and functioning of "steady-state" soils. Comparison of actual and anticipated distributions of soils, their fertility and management problems presents students with situations rife for speculation and investigation.

Vegetation also uses energy and moisture which the climate provides. The water balance enables the student to determine which seasons are effective for vegetation processes and which seasons are hazardous in the ecosystem's dynamics. Since potential evapotranspiration has utility as a vegetation development index, the ecosystems can be analyzed for the limitations which available energy (and moisture) impose upon primary productivity. Patterns of relative productivity both in respect to energy and moisture may then be assigned to the climatic map the student prepared earlier. Thus, students are not directed to the learning of form and structure in terms of what is anomalous and what is predicably distributed, according to potential productivity indicators.

The water balance model can be manipulated in several respects to gain insights into water resources because these resources are readily represented in quantitative fashion. Students seem to respond well to such notions as: the main water resource is soil moisture: the season of maximum flow of streams is more closely related to energy than to precipitation (coldness makes more contrast in mid-latitude streams than seasonal precipitation does): the season of persistent groundwater recharge is generally pitifully short–one to four months. These are conclusions which student manipulation of the water balance establishes.

Basins of the seas are ventilated with oxygen from the surface where evaporation persistently exceeds precipitation enough for salinity to be increased. The sinking dense water carries down oxygen and heat to lower depths. In unventilated basins, precipitation exceeds evapotranspiration and there is limited transfer of surface materials downward. The importance of the water balance to determine the "deserts of the sea" intrigues students.

Agricultural systems present another opportunity to explore how productivity and development requirements serve to segregate the pattern of crops. How the crop fits the seasons of adequate energy and moisture, how the farm organization and activities are scheduled to accommodate the seasons and what pattern of cropping and grazing is expectable may be examined with the aid of climatic qualities of the seasons. The frequency and intensity of drought also can be modeled with climatic data.

Weathering and stream transportation are somewhat amenable to treatment by the implications of the water balance model. Seasons of relative activity and inactivity, the frequency of exceptionally efficient periods for weathering or transport and estimates of total production and movement for long periods can be ventured with the aid of the water balance parameters. Regionalization of slope development and watershed appearance is possible.

The non-steady-state of the water balance, i.e., the actual balance for a month or a day, has importance for a great many studies. Students would gain valuable lessons if they could investigate the effects of watershed management on snow melt, the intensities of flooding and their effects on potential damage, the ravages of drought on various combinations of crops, or similar phenomena which involve the non-steady-state of climate. These problems generally involve questions of the wise use of the land where the land does not behave in the same way at all times. They have been called "perception" problems but they are more widely known as "operations research" problems. They generally require the comparison of the values or hazards to land use for a variety of naturally occurring conditions of different intensities. Thus, there are often large quantities of data to be compared. It would be appropriate to use computer-based instruction for such topics. The student might then engage in a number of formal decision-making activities in which the computer provides him the voluminous data and performs the computations he requires for his decisions.

In large classes, the computer can be the means of giving the student the individual attention the instructor may regard as desirable. For example, if the student can go to the console and carry on a dialogue with the "instructor" through the computer, there are obvious teaching advantages for large classes. The series of alternatives given the student in the solution of an operations research problem are those the "instructor" anticipates for each of the paths taken by students in face-to-face confrontation of the particular problem. The student could be asked sequentially what steps he is willing to entertain in the solution of a problem. His responses having been anticipated, the computer could reproduce the "instructor's" reaction to each choice. The dialogue for a particular student depends upon which choices he makes in the program as it is presented to him. Additionally, the manipulation of data, derivation of quantities, graphing, comparison of data arrays from different places, etc., are removed from the brow of the student and his energy can be concentrated directly on the solution of the problem. Grading of students by the instructor might be somewhat less subjective: the number of examples could be enlarged, and the time for the student to reflect on areal consequences could be increased by use of the time-saving qualities of the computer.

Conclusion

The Introductory course in Physical Geography ought to be in harmony with certain conditions which are part of the overall educational experience of students. This is not the first geography the students have had and the course ought to build upon what has been developed previously. The course should have its own goals but these goals ought to fit into a progression of experiences which geography students began many years previously and, in the event they continue in geography, will encounter again and again. Hopefully, this experience can be the sort of spiral where the same areas of investigation are approached over and over at different levels as the student's intellectual maturity progresses. The kinds of learning that occupied the student while he was in the fifth grade will no longer serve to focus the Introductory course in college Physical Geography. This seems obvious but nevertheless it has been the basis for many introductory geography courses. We excuse the content of our courses on the basis that students do not know certain things that we presume they might have had an opportunity to learn from Life Magazine or from sixth grade onward. The reason they do not know what is expected is not necessarily because they are poor students; maybe, what they were given and are expected to know is really quite irrelevant to their lives.

The central task for an Introductory course of Physical Geography is to accomplish certain objectives: (1) the student should have no doubts the course is about the world and its environmental relations; (2) some of the language of environment and place should be learned; (3) students should learn skills in reasoning appropriate to their level of experience and they should gain experience in designing arguments, in speculating responsibly (predicting) however tenuous on the plausible or possible extensions of the subject matter of the course; and (4) there should be an honest attempt to lay out the welcome mat for students who are sufficiently stimulated by the course to facilitate their further specialized training leading to a career in the field.

There appears to be a serious need for restructuring of the Introductory course in Physical Geography. Of greatest need are schemes which teach the form and functioning of features of the environment while at the same time providing the possibility for analysis of needs or consequences of environmental manipulation or variability. Present courses are top-heavy with descriptive terminology having little utility. Selection of a manageable part of the present comprehensive content, introduction of a problem focus for students, and the wider use of real, complex examples would possibly achieve the improvement in purposes and accomplishments of the introductory course which is intensely desired by some geographers.

LINKS BETWEEN PHYSICAL AND HUMAN GEOGRAPHY: A SYSTEMS APPROACH

Robert Kates

Introduction

This is a position paper in physical geography presented by a social scientist currently engaged in psycho-geography. I believe that I find myself here in good company.

It ought to be helpful to define the base of preference, bias, and assumption on which my position rests.

First, I am not now, nor have I ever been a physical geographer.

Second, I am a geography-is-what-we-do adherent, a definitional coward, and a field delineation pacifist. What do we geographers do? Pattison said it well (Pattison, 1964): we study nature over the earth, focus on area or region, or thematically consider man-in-nature or man-in-space.

Third, my personal preference is for the man-in-nature problem (slightly expanded as man-in-environment). In so doing I acknowledge the less-equal-than-others position of Taaffe (Taaffe, draft) and regulate myself to a minority recognizing man-in-space as the dominant theme of the profession. If labels are desired, I would even answer the role call of environmental determinists, if by environment you would include the world as sensed within peoples' heads.

Fourth, to add to my shameful posture, I confess an inordinate attraction to system analytic thinking, finding therein not only the new jargon of the *cognoscenti* but a useful set of organizing concepts as well.

It is my intention to demonstrate this form of thinking and analysis in what follows.

Four Thoughts for an Introductory Course

There are four notions that I want to communicate to students in an introductory course and particularly in the physical geography section. They are:

1. The connectivity between phenomena, the interrelatedness of things on the earth.
2. The complexity of phenomena, a close look at almost anything reveals our ignorance of place and process.
3. Paradoxically for the foregoing, rudimentary knowledge of some general principles and distributions can explain a great deal about *what* is found *where*, on earth.
4. Physical geography is not simply earth science but must be related to human geography. The traditional man-land relationship might more accurately be viewed as the complex interaction between natural and human systems.

Given these four notions, I begin with a large system, global in character. I have chosen the hydrologic cycle, but others might consider the energy cycle, ecosystems, or some other global system. I chose the hydrologic cycle because (1) I am more familiar with it, (2) it is better understood than other large systems, (3) it is more meaningful for students in terms of their common experience, and (4) it is easily related to the economic and social systems that men create for themselves.

In Figure 1, I have outlined my conception of the hydrologic cycle as a set of connected subsystems through which flows of precipitation, rivers, water vapor and the like take place. The set of subsystems can be organized in a variety of ways; as I conceived it, there are six major subsystems.

Five of the subsystems are essentially natural systems and they are used to convey the notions of complexity and generality previously suggested. For each subsystem, I have chosen aspects that illustrate these notions and are related to the overall system of the hydrologic cycle, as well. The aspects represent my preference and training, and another geographer might choose other principles and processes. The subsystem approach is flexible enough to accommodate many different postures. I might note parenthetically that this is important given, as Marcus notes, that much physical geography is taught by non-physical geographers (Marcus, draft). The situation will not change, and it must be remembered that we teach best that which we know best. We can begin now with the major subsystems.

Subsystems

The Atmospheric Subsystem

I would begin by asking the deceptively simple question, why does it rain? (In Figure 2 the answer is suggested by the diagrams of various rainfall production processes). It is here that the student can be introduced not only to the usual textbook explanations (vapor-holding capacity, dew-point, orographic, cyclonic, convectional, precipitation, etc.), but also to some of the new problems and uncertainty that have arisen from studies of cloud physics and weather modification (Wycoff, 1966). The bright student when asked, "why does it rain," might reply "we don't know," because to really answer the question we must be able to explain why it does not rain when it should and, conversely, why it rains when conditions are apparently not suitable.

If the question, "why does it rain?" brings a student face to face with the complexity of things, a knowledge of the global distribution of wind and pressure belts (Figure 2) illustrates the opposing notion that despite complexity much can be known about the nature of the world through the knowledge of rudimentary processes and their distribution.

The Oceanic Subsystem

A knowledge of the broad circulation patterns of the ocean provides a set of generalizations similar to those of the atmospheric subsystem. To link the ocean subsystem with the overall cycle, I would focus on the sediment transport processes of beach and delta formation at the land-sea interface. A link to the human system might be provided by study of the problem of beach nourishment that arises when natural sediment transport is interfered with my dam construction. The *Encyclopedia Britannica* has prepared an excellent film demonstrating these processes.

The Land Surface Subsystem

The land surface subsystem distinguishes between soil and streams

HYDROLOGIC CYCLE

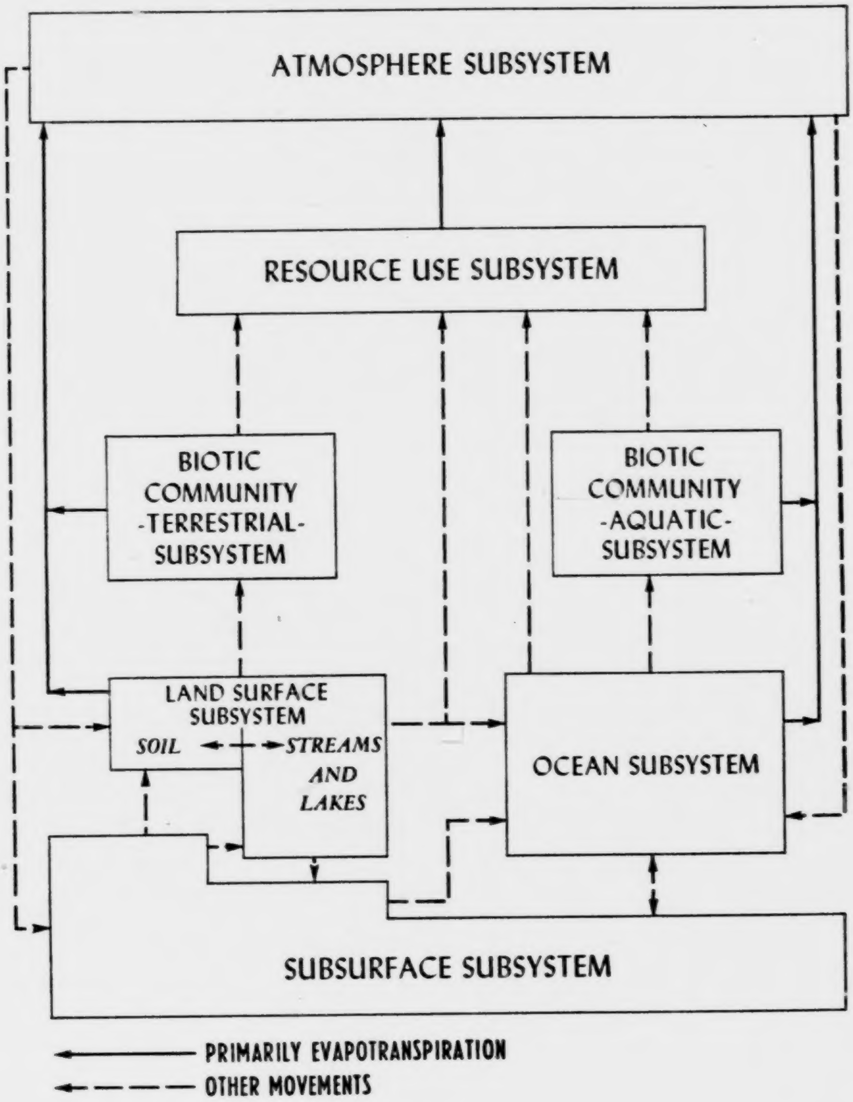
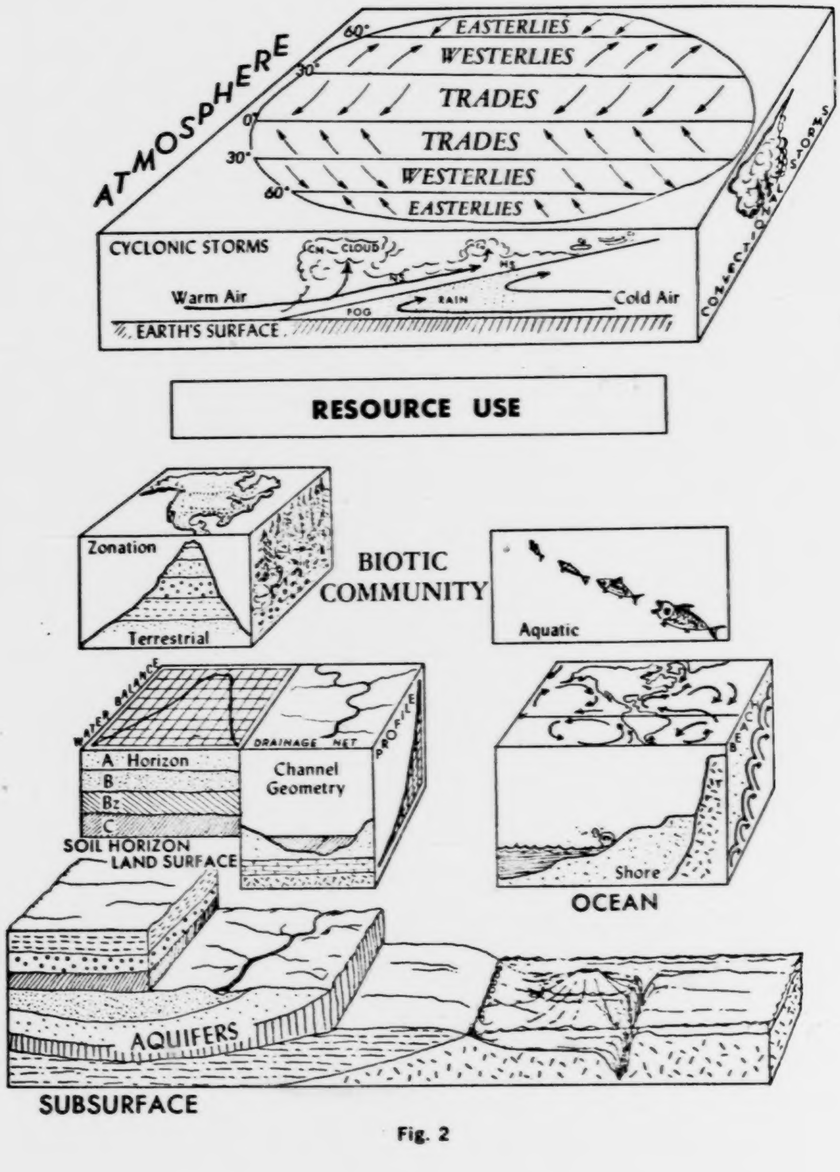

ATMOSPHERE SUBSYSTEM
RESOURCE USE SUBSYSTEM
BIOTIC COMMUNITY -TERRESTRIAL- SUBSYSTEM
BIOTIC COMMUNITY -AQUATIC- SUBSYSTEM
LAND SURFACE SUBSYSTEM
SOIL
STREAMS AND LAKES
OCEAN SUBSYSTEM
SUBSURFACE SUBSYSTEM
PRIMARILY EVAPOTRANSPIRATION
OTHER MOVEMENTS

Fig. 1


ATMOSPHERE
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Warm Air
FOG
RAIN
Cold Air
EARTH'S SURFACE
RESOURCE USE
Zonation
Terrestrial
BIOTIC
COMMUNITY
Aquatic
WATER BALANCE
DRAINAGE NET
PROFILE
A Horizon
B
Bz
C
Channel
Geometry
SOIL HORIZON
LAND SURFACE
Shore
OCEAN
AQUIFERS
SUBSURFACE

Fig. 2

and lakes and between land and fresh water surfaces. I would introduce the water balance here to illustrate the complexity and generality of evaporative processes and to relate structure, texture and process of soil formation to the overall system. The need to specify a soil moisture holding capacity for the water balance leads naturally into a discussion of texture and structure and the passage of water through the soil provides an opportunity to discuss percolation, leaching and the relationship to different zonal soils.

In the discussion of streams and lakes the broad generalizations related to drainage nets, profiles, and channel geometry can be introduced along with the complex problem of answering other deceptively simple questions of why streams meander or why braided streams braid.

The Subsurface Subsystem

Water as groundwater provides the opportunity of introducing the student to subsurface phenomena, major types of rock formation, tectonic processes and the like. Aquifers can be used to illustrate the variability of rock type and the complexity of underground formation.

The Biotic Community Subsystems

I would probably spend less time on the aquatic community than the terrestrial one, but this might be a convenient place to introduce the concept of a food chain. The terrestrial biotic community could be used for a unit on zonation: vegetational (within a forest community), vertical (on a mountain), and continental (within the U.S.). These zonations can be directly related to the interplay between the atmospheric and land surface subsystems.

The Resource Use Subsystem

Here a new set of relationships are introduced for the resource use subsystem is a point of major intersection between natural and human systems. I have tried to sketch this intersection in Figure 3 with the resource use in a horizontal plane and the hydrologic cycle in a vertical plane.

The resource use subsystem employed in this schema is a generalized economic geography of the production process. Productive inputs of land, labor and capital are combined in the three traditional sets of functional economic processes. Note that alternative systems could be used as well. Kinship systems, land tenure and use systems, social, legal or political systems all lend themselves to this format, for to a greater or lesser degree they intersect with the hydrologic cycle and the choice of system can depend on the bent of the teacher and the other material in the introductory course.

I have crudely quantified the flow of water through the resource use subsystem utilizing as a base a set of annual average estimates made by Abel Wolman (Wolman, 1962). Of the water available to the conterminous United States from precipitation, aquifers and storage (4,760 maf or 29.35" of depth over the entire land area) 46.0 per cent enters the resource use subsystem but only 7.4 per cent through direct human intervention.

Direct withdrawal is only one of the many systematic modifications made by man, and students seem to profit from exploring present and potential modifications of the hydrologic cycle. The perturbations in the system created by one or more of these modifications can also be traced in part—for example, the storage in and release from a reservoir of substantial amounts of water in an arid area. The varied effects on micro-climate,

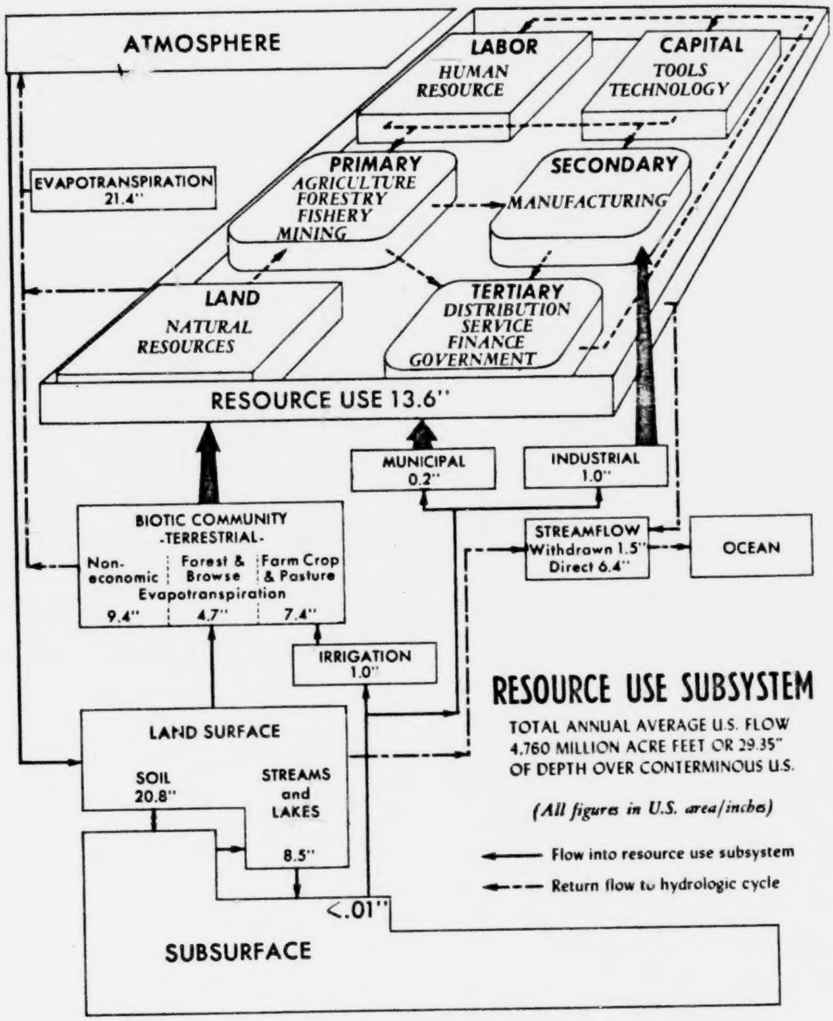
ATMOSPHERE
LABOR
HUMAN RESOURCE
CAPITAL
TOOLS TECHNOLOGY
EVAPOTRANSPIRATION 21.4"
PRIMARY
AGRICULTURE
FORESTRY
FISHERY
MINING
SECONDARY
MANUFACTURING
LAND
NATURAL RESOURCES
TERTIARY
DISTRIBUTION
SERVICE
FINANCE
GOVERNMENT
RESOURCE USE 13.6"
MUNICIPAL 0.2"
INDUSTRIAL 1.0"
BIOTIC COMMUNITY
-TERRESTRIAL-
Non-economic
Forest & Browse
Farm Crop & Pasture
Evapotranspiration
9.4"
4.7"
7.4"
STREAMFLOW
Withdrawn 1.5"
Direct 6.4"
OCEAN
IRRIGATION 1.0"
RESOURCE USE SUBSYSTEM
TOTAL ANNUAL AVERAGE U.S. FLOW
4,760 MILLION ACRE FEET OR 29.35"
OF DEPTH OVER CONTERMINOUS U.S.
(All figures in U.S. area/inches)
Flow into resource use subsystem
Return flow to hydrologic cycle
LAND SURFACE
SOIL 20.8"
STREAMS and LAKES
8.5"
<.01"
SUBSURFACE

Fig. 3

evaporation, vegetation, fluvial geomorphology, etc., while not as well understood as desired, are sufficiently known to give students further feel for the interrelatedness of things.

Afterthought

This then is my notion of a physical geography course that can be related to the dominant social science themes in geography. But, in retrospect, I wonder whether I am fighting a rear guard action by trying to make relevant an area of study and research that is but a superfluous fringe of the burgeoning earth and geo-physical sciences or a vestigial appendix to an exciting social and behavioral geographical science. As I review my experience with three separate groups of disciplines over the past three years, I find grounds for a cautious negative answer. For in work dealing with water resources, earthquakes and weather modification potential involving physical scientists in atmospheric, geologic, hydrologic, oceanographic, and seismologic science I note a convergence between social scientists and physical scientists in the areas in which the great physical systems interact with the human systems of settlement, production, consumption, transport and the like.

The convergence is a social convergence. It arises from a concern based on contrasting observations of the potential of science and technology to alter some systems with ease and to reveal in other systems magnitudes of energy that dwarf the most devastating of man's weapons. How to understand the long term implications of the former and to adjust to the latter is a broad general problem that provides a communality of interest regardless of whether one is concerned with efficient use of water resources, rational patterns of settlement in earthquake areas, or inadvertent weather modification through urbanization. In this community of interest, geographers who have traditionally sat as mugwumps astride the social and physical sciences can find a most exciting and useful place.

I think traditional physical geography is at a crossroads, having suffered from the erosion of its domain by the many earth science specialties and the ageing of its competence and concepts. But 102 years after its publication, Marsh's physical geography as modified by human action (Marsh, 1965 ed.) is still uniquely our own. It is this physical geography with a unique focus on man that can survive as it is an economic, cultural and political geography with sensitivity towards nature that has demonstrable utility. If this is so, then our introductory courses should reflect it, but in a form and content compatible with modern and rapidly progressing science.

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TOWARD STRESSING STRUCTURE IN GEOGRAPHIC INSTRUCTION
or
GOOD-BY TO HEVEA BRAZILIENSIS[1] AND ALL THAT

Robert B. McNee

George B. Cressey, one of the greatest geography teachers of the 20th century, used to liven his lectures with capsules such as "too much of Asia is too cold, too dry, too mountainous, too infertile, or too remote to be attractive to the hungry millions of Asia." Perhaps he would enjoy my parody: too much introductory geography is too abstract, too dry, too heaped with mountainous detail, too conceptually infertile, or too remote from the world as perceived by students to be attractive to them as an intellectual challenge. This is unfortunate, for I believe that there are hundreds of thousands, if not millions, of underclassmen hungry for the kind of understandings and intellectual excitement being generated at the frontiers of geographic research today. The dispersal of new ideas from points of origin (geographic research centers) into widely dispersed geographic classrooms is necessarily a slow process, but it need not be as slow as it is. I believe the process can be accelerated and geographic instruction vastly improved, by adopting new teaching approaches to parallel our new thrusts in research.

The Stressing of Structure

Geographers can and should adopt many of the ideas of instruction being advocated by Jerome S. Bruner[2] and others of his school of psychology. Bruner believes, quite rightly I think, that students should be introduced to disciplines rather than subject matter as such. It is more important that the student learn to think like a geographer than it is for him to know a lot "about" the earth. Learning to think like a geographer means many things, but above all it means absorbing the conceptual structure of the discipline. I am not speaking merely of the general advantage of concepts and theories over mere data or factual information. Surely we all appreciate the great value of concepts and theories in organizing data. Indeed, if we did not share a great many concepts I do not know how we could communicate at all. Certainly, also, we all appreciate the speed with which the facts of many geographic distributions change. Most of the facts that I have learned (and taught!) over the years are either untrue or irrelevant in 1966. No, when I speak of conceptual structure I mean the overall idea-system of geography, the way in which the ideas from the varied parts and sub-divisions fit into some generally coherent pattern of thought. In this, as in many other matters, the whole is more than the sum of its parts.

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[1] *Hevea braziliensis* has been singled out as an example of the irrelevant detail often found in geography texts and courses. I have never been able to understand why just plain "Brazilian Rubber Tree" wasn't enough, especially since the botanical names of other far more important crops are less frequently cited. I do not mean to imply that my own courses are without irrelevancies. However, a stress on conceptual structure for the course gives a criterion for the continuing task of pruning the irrelevancies which normally creep into the best of courses.

[2] Jerome S. Bruner, "The Growth of Mind," *American Psychologist*, XX (1965), pp. 1007-1017, and also *The Process of Education* (New York: Vintage Books, 1963).

Jerome Bruner and others of his persuasion are deeply involved in the current revolution in the teaching of science at all levels from kindergarten through college. Even if one does not accept his teaching philosophy, and it has much to recommend it, every teaching geographer should be aware of the underlying ideas in this curricular revolution.

Bruner believes that the inductive approach is the most effective method of developing this conceptual structure in the mind of the student. Don't tell the student "about" geography; instead, allow him to learn geography by being a geographer. Allow him to discover, for himself, what a messy business research really is: how hard it is to clearly define a problem, develop hypotheses, collect relevant and reliable data, test the hypotheses, and logically interpret the results. Allow him to learn about geographic classifications by himself classifying–allow him to develop his own regional systems rather than having them thrust upon him! Allow him to learn about the role of theory and conceptual structure by himself groping for the major organizing ideas, themes, and threads of thought in the discipline. After he has groped enough, allow him to compare his notion of the idea-system or conceptual structure of geography with others. In short, deliver him from the "textbook-lecture-fill in the blanks" syndrome!

You may consider me impractical if you like. I'll admit that the course I am advocating sounds more like a graduate seminar than the traditional introductory course. But can we be so sure that many of the aspects of graduate seminars cannot also be used at more introductory levels? The concepts-centered inductive approach is being tried in many subjects in both the colleges and the schools, apparently with success. It will be tried in the new introductory course being developed at the University of Cincinnati.

Even if you do not consider me impractical, you may well ask how you could find time in such a course to "cover" all of the things you now "cover." Well, the answer is simple, you can't. You would have to sacrifice the goal of "covering" the entire earth in the comprehensive fashion attempted in the traditional world regional course. But are you really sure that it is necessary to include all of the facts and lesser concepts now "covered?" Any objective comparison of the varied introductory texts and the varied course outlines used in different institutions shows that there is amazing lack of unanimity among geographers as to just which geographic facts, percepts, and minor concepts are indispensable. The "hard core" of facts, percepts, and minor concepts common to them all is relatively small. These could be included. And if the course focused on the development of the conceptual structure of the field, you could then feel free to use such facts, percepts, and minor concepts as you might feel best illuminated the conceptual structure.

Conceptual Structure and the Research Frontiers

Each instructor should develop, for his own use, a statement of what he understands the present-day conceptual structure of geography to be. This statement should be operational, i.e., actually useful in course design. Many published statements on the nature of geography are too vague and general to be of much value in course construction. Others are highly useful in research work but only obliquely related to the teaching enterprise. Secondly, the concepts included should be those generally acceptable to the profession. Individuality is the life blood of effective teaching but this individuality should be expressed more in terms of teaching strategy and content detail than in the selection of major concepts to be taught in introductory courses. Each of us should seek to introduce geography and not just our own pet brand or type of geography. I do not mean we should seek unanimity. I do mean we should strive for the middle ground between unanimity and highly individualized notions about geography's conceptual structure. Highly individualized notions about the nature of geography should find their expression in research or in advanced courses, not in introductory courses.

Such statements of conceptual structure should be continually up-dated. Our introductory courses should reflect the current concerns of geographers, i.e., the research frontiers, as closely as practicable. Courses which include only those concepts widely acceptable to the geographers of 1910 are not likely to be very exciting to the instructor. If they do not excite the instructor, why should we believe they will excite the student? *The Science of Geography*[3] is the best single guide to the current research concerns of the field, even though it clearly was not intended to cover all significant research trends in all phases of the discipline. The research concerns reported therein, as well as other research concerns held by geographers, can be understood only by closely analysing recent articles and monographs *by geographers*. Once these research concerns have been clearly identified by studying works written *by geographers*, first those in geographic journals and then also those in non-geographic or semi-geographic outlets, one can safely consider also related articles by non-geographers. That is, I would not exclude significant articles written by non-geographers from consideration as supplements to the course. But I would consider such articles only in the context of an elaboration or clarification of a research concern clearly manifested by practicing geographers. If geographers universally adhered to this rule of developing courses around the concepts significantly treated in our own literature, much of the present disparity among our introductory courses would disappear. And if the conceptual structures forming the cores of our courses were continually up-dated, the student might find geography to be just as exciting as we do.

Research Frontiers in Urban-Economic Geography

The research frontiers of urban-economic geography have expanded more rapidly in the last 15 years than in any comparable earlier period and more rapidly than the research frontiers of any other branch of geography in the post-War period. Consequently, the gap between the urban-economic research frontier and introductory geography courses at the college level is particularly great. This gap is being very significantly narrowed in the case of the Settlement Theme course being developed by the High School Geography Project. When completed, in 1967 or 1968, this course may be the most conceptually up-to-date ever offered at the high school level, perhaps only 5 to 10 years behind the research frontiers of geography. The gap persists at the college level, however. With the release of the Settlement Theme course, many introductory geography courses at the college level will be conceptually outmoded. No doubt the activities of the Commission on College Geography will encourage wide and successful experimentation with updating at the college level.

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[3] National Academy of Sciences-National Research Council. *The Science of Geography* (Report of the Ad Hoc Committee on Geography. Earth Sciences Division. Publication 1277; Washington, D.C.: National Academy of Sciences-National Research Council, 1965). p. 80. for reviews and commentary on the above see R. S. Thoman. "Some Comments on *The Science of Geography*," *Professional Geographer*, XVII (1965), pp. 8-10 P. E. James, Review of *The Science of Geography*, *Geographical Review*, LVI (1966), pp. 127-129, H. H. McCarty, Review of *The Science of Geography*, *Economic Geography*, Vol. 42 (1966), pp. 273-4, and portions of N. Ginsburg, "On Regional and other Geographies," (Draft of paper presented at the N. S. F. Summer Institute in Geography; Columbus: The Ohio State University, 1966). (Mimeographed); two closely related papers are W. Pattison, "The Four Traditions of Geography," *Journal of Geography*, LXIII (1964), pp. 211-216, and R. B. McNee, "The Structure of Geography and its Potential Contribution to Generalist Education for Planning," *Professional Geographer*, XVIII (1966), pp. 63-68.

The most significant research frontier in urban-economic geography today is implied by the terms "locational analysis" and "location theory" though such terms only hint at the sweeping transformation in thought taking place among urban-economic geographers. The new emphasis on locational analysis of a conceptually rigorous and operationally testable type is by no means confined to urban-economic geography nor is there any reason for assuming that only economic-urban geographers will find such approaches useful. But, as of today, such locational analysis has taken root primarily in urban-economic geography. Hence, the authors of The Science of Geography, casting about for a less unwieldy term than "urban-economic-transportation geography," coined the term "location theory cluster" to describe this research thrust. There is no need to belabor the ideas associated with this approach here, since these ideas are stressed in The Science of Geography, Peter Haggett's tour-de-force,[4] the next text by McCarty and Lindberg,[5] and many articles published in the last decade.[6] Some geographers teaching introductory courses may be tempted to dismiss this research thrust as mere gadgetry (as "just" statistical geography, "just" mathematical geography, or "just" quantitative geography) or as mere indulgence in jargonese. However, I would assert that anyone teaching introductory courses who does not make an honest attempt to incorporate the new ideas associated with the "location theory cluster" into his teaching is seriously cheating his students as well as intellectually crippling himself.

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[4] Peter Haggett, *Locational Analysis in Human Geography* (New York: St. Martin's Press, 1966).

This advanced text is the best single introduction to the "new" geography. For the first time, it brings together in one "grand design" most of the more challenging ideas of the "location theory cluster" of research geographers. It is generally very clear and highly readable. All geographers teaching introductory geography should master this book.

[5] Harold H. McCarty and James B. Lindberg, *A Preface to Economic Geography* (Englewood Cliffs: Prentice-Hall, 1966).

This is the first introductory text in economic geography to completely eschew the traditional detailed descriptions of the multitudinous forms of economic production. Instead, it stresses the perception of problems in economic geography, questions of data collection and manipulation, the statement of hypotheses, the testing of hypotheses, and the interpretation of results in forms that beginning students can understand and use. Most of the standard location theories of economic geography are presented in more detail than in conventional texts but the emphasis is on the unknown in economic geography and how a student may proceed to change the unknown to the known rather than on our thinly developed theories of location. The usual order of presentation is reversed; the text proceeds from the tertiary occupations through manufacturing to agriculture and to the extractive industries. All geographers teaching introductory geography should master this book.

[6] Many useful items can be found in the following recent bibliographies B. J. L. Berry and A. Pred, *Central Place Studies: A Bibliography of Theory and Applications* (Bibliography Series, Number One, Regional Science Research Institute; Philadelphia, 1961); B. J. L. Berry and T. D. Hankins, *A Bibliographic Guide to the Economic Regions of the United States* (Department of Geography Research Paper, No. 87; Chicago: University of Chicago, 1963); W. R. Siddall, *Transportation Geography: A Bibliography* (Kansas State University Library; Manhattan, Kansas, 1964); P. W. Porter, *A Bibliography of Statistical Cartography* (Department of Geography; Minneapolis: University of Minnesota, 1964).

Some important articles of review nature are:

B. J. L. Berry, "Research Frontiers in Urban Geography," *The Study of Urbanization*, eds. P. Hauser and L. Schnore (New York: John Wiley & Sons, Inc., 1964), pp. 403-430;

The new approaches have allowed new insights into the geography of production, the historic core of both urban and economic geography. Urban and economic geography have long been overlapping fields, somewhat separated and yet united by a common focus on the geography of production (Figure 1). Economic geography has tended to stress primary production and secondary production while urban geography has tended to stress tertiary production. It is now apparent that the entire production sequence or continuum from primary production to quaternary production is of significance to both urban and economic geographers. Similarly, the historic tendency for urban geographers to operate at larger scales than economic geographers is disappearing. It is now evident that all phases of production must be analysed at a full range of scales, regardless of whether the study is considered as urban geography or economic geography. The historic tendency to stress production rather than consumption continues, apparently for the reasons cited by Gregor,[7] McNee,[8] and McCarty and Lindberg.[9] Thus, the primary effects of the rise of locational analysis appear to be the rapid advancement of an old research frontier, the location of production, and the blurring of past distinctions between urban geography, economic geography, and transportation geography.

An important secondary effect of this trend has been a reduction in interest by many urban-economic geographers in other urban-economic research frontiers. The *geography of resource management* has historically been considered a part of economic geography but *The Science of Geography* classifies it as a part of an expanded political geography. Saul Cohen has carried this line of thought further, in advocating a "geography of policy."[10] Articles of this genre include Meinig's study of railnets,[11] Goodwin's study of management centers,[12] and my studies of the geography of the firm,[13] though none of these are by political geographers *per se*. The main line of thinking about the geography of resource management is more clearly

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B. J. L. Berry, "Recent Studies Concerning the Role of Transportation in the Space Economy," *Annals*, Association of American Geographers, IL (1959), pp. 328-342;

W. L. Garrison, "Spatial Structure of the Economy: I," *Annals*, Association of American Geographers, L (1960), pp. 357-373;

H. H. Mayer, "Urban Geography and Urban Transportation Planning," Traffic Quarterly, Vol. 17 (October, 1963), pp. 610-631;

B. J. L. Berry and W. L. Garrison, "Recent Developments of the Central Place Theory," *Papers and Proceedings*, Regional Science Association, IV, (1958), pp. 107-120;

J. W. Birch, "Rural Land Use and Location Theory: A Review," *Economic Geography*, Vol. 39 (1963), pp. 273-276.

[7] H. F. Gregor, "German vs. American Economic Geography," *Professional Geographer*, IX (1957), pp. 12-13.

[8] R. B. McNee, "The Changing Relationships of Economics and Economic Geography," *Economic Geography*, XXXV (1959), pp. 189-198.

[9] H. H. McCarty and J. B. Lindberg, *op. cit.*, pp. 7-8.

[10] S. B. Cohen, "Toward a Geography of Policy," (Guest Editorial), *Economic Geography*, Vol. 42 (1966), Facing I.

[11] D. W. Meinig, "A Comparative Historical Geography of Two Railnets: Columbia Basin and South Australia," *Annals*, Association of American Geographers, LII (1962), pp. 394-413.

[12] William Goodwin, "The Management Center in the United States," *Geographical Review*, LV (1965), pp. 1-16.

[13] R. B. McNee, "The Economic Geography of an International Petroleum Firm," *Focus on Geographic Activity: A Collection of Original Studies*, eds. R. S. Thoman and D. J. Patton (New York: McGraw-Hill, 1964), pp. 98-107.

THE CORE OF URBAN-ECONOMIC GEOGRAPHY

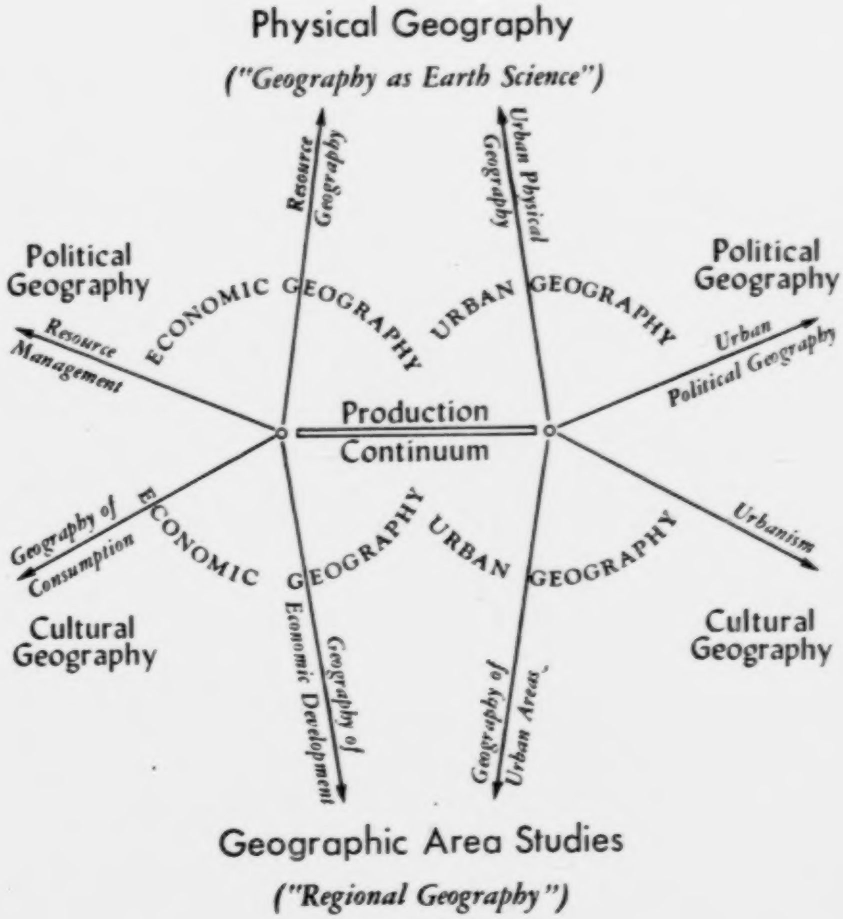
Physical Geography
("Geography as Earth Science")
Resource Geography
Urban Physical Geography
Political Geography
Political Geography
ECONOMIC GEOGRAPHY
URBAN GEOGRAPHY
Resource Management
Urban Political Geography
Production Continuum
Geography of Consumption
Urbanism
ECONOMIC GEOGRAPHY
URBAN GEOGRAPHY
Cultural Geography
Cultural Geography
Geography of Economic Development
Geography of Urban Areas
Geographic Area Studies
("Regional Geography")

Fig. 1

reflected in the recent book of readings by Burton and Kates.[14] Both the geography of resource management and the geography of economic development have benefited from ideas associated with the "location theory cluster." Some interesting articles contributing to the understanding of the geography of economic development as a process include Boas's study of the auto industry,[15] Linge's study of manufacturing diffusion,[16] Morrill's study of town distribution,[17] the Taaffe, Morrill, and Gould study of transport network evolution,[18] and Thompson, et al.,[19] on economic health. Cultural geographers have also made significant contributions to the understanding of economic development, particularly in a highly significant article on the origins of the Corn Belt by Spencer and Horvath.[20] Contributions to the geography of consumption have been few, except as found in the work of cultural geographers. Similarly, contributions to resource geography have been primarily by physical geographers rather than urban-economic geographers.

I consider the geographic study of the urban "way of life" or "urbanism" to be a research frontier of great potential importance to both urban and cultural geography. I believe also that this topic should form a significant part of our introductory courses if our courses are to be relevant to the student. However, urban geographers have not developed this topic much of late and cultural geographers have continued to stress rural culture more than urban culture, perhaps because of a cultural bias distinctive to geography and perhaps merely because American culture still has a strong rural bias. Two studies of great value in introductory geography include Price's study of Viterbo[21] and Gottmann's monumental study of Megalopolis.[22] The geography of urban areas or regional urban geography has not been cultivated as much as it ought to be, but useful studies include Borchert's study of the Twin Cities,[23] Geography of New York State edited by John Thompson,[24] and, of course, Megalopolis. Relatively few contributions to either urban political geography or physical urban geography have been made by urban geographers in recent years, though these are highly significant research frontiers and important for introductory geography.

In short, the most active research frontier in urban-economic geography today is the locational analysis of production. Other frontiers in urban-economic geography have advanced also, but less rapidly. Therefore, the gap between the ideas of those concerned with the locational analysis of production and what is taught about the location of production in introductory courses is particularly great. The closing of this gap is the most important educational problem facing geographers teaching introductory college geography today. Much trial and error will be necessary before we can find the most effective means of closing the gap. Part IV is intended as a contribution toward that end.

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[14] Ian Burton and Robert Kates (eds.), *Readings in Resource Management and Conservation* (Chicago: University of Chicago Press, 1965) p. 609.

[15] C. W. Boas, "Locational Patterns of American Automobile Assembly Plants, 1895-1958," *Economic Geography*, XXXVII (1961), pp. 218-230.

[16] G. J. R. Linge, "The Diffusion of Manufacturing in Auckland, New Zealand," *Economic Geography*, Vol. 39 (1963), pp. 23-39.

[17] R. L. Morrill, "The Development of Spatial Distribution of Towns in Sweden: An Historical-Predictive Approach," *Annals*, Association of American Geographers, LIII (1963), pp. 1-14.

[18] E. J. Taaffe, R. L. Morrill, and P. R. Gould, "Transport Expansion in Underdeveloped Countries: A Comparative Analysis," *Geographical Review*, LIII (1963), pp. 503-529.

[19] J. H. Thompson, S. C. Suffrin, P. R. Gould, and M. Buck, "Toward a Geography of Economic Health: The Case of New York State," *Annals*, Association of American Geography, LII (1962), pp. 1-20.

[20] J. E. Spencer and R. J. Horvath, "How Does an Agricultural Region Originate?," *Annals*, Association of American Geographers, LIII (1963), pp. 74-92.

[21] E. T. Price, "Viterbo: Landscape of an Italian City," *Annals*, Association of American Geographers, LIV (1964), pp. 242-275.

[22] J. Gottmann, *Megalopolis* (New York: The Twentieth Century Fund, 1961) pp. 810.

[23] J. R. Borchert, "The Twin Cities Urbanized Area: Past, Present, and Future," *Geographical Review*, LI (1961), pp. 47-70.

[24] J. H. Thompson (ed.), *Geography of New York State* (Syracuse: Syracuse University Press, 1966).

A Conceptual Structure for Production Geography

The accompanying diagram of production geography (Figure 2) includes the basic locational relationships for production geography, and, it is hoped, reflects the current literature, in both urban-economic geography and geography as a whole.[25] It is assumed, in the diagram, that we are concerned with human productive behavior in a spatial setting and that this behavior occurs in a social context. The society, whether a tribe, a village, or a nation, is self-directed, setting its own goals. Because of such social self-direction, the concepts of culture and perception are more useful concepts than either the "economic man" of 19th century economics or the outmoded "geographic man" or näive environmentalism. Both individuals within the group and the group as a whole are capable of solving problems associated with the implementation of goals. Put differently, both individuals and society make decisions necessary for goal-implementation. The goals of the group may change over time, though usually slowly. The number of people

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[25] An article of particularly great importance as background for the diagram is Julian Wolpert, "The Decision Process in Spatial Context," *Annals*, Association of American Geographers, LIV (1964), pp. 537-558.

Other background articles, in addition to those already cited, include:

L. Curry, "The Random Spatial Economy: An Exploration in Settlement Theory," *Annals*, Association of American Geographers, LIV (1964), pp. 138-146;

W. L. Garrison and D. F. Marble, "The Spatial Structure of Agricultural Activities," *Annals*, Association of American Geographers XLVII (1957), pp. 137-144;

A. Grotewold, "Von Thunen in Retrospect," *Economic Geography*, Vol. 35 (1959) pp. 346-355;

A. Pred, "The Intrametropolitan Location of American Manufacturing," *Annals*, Association of American Geographers, LIV (1964), pp. 165-180;

H. A. Stafford, "Factors in the Location of the Paperboard Container Industry," *Economic Geography*, Vol. 36 (1960), pp. 260-266;

E. J. Taaffe, "The Urban Hierarchy: An Air Passenger Definition," *Economic Geography*, Vol. 38 (1962), pp. 1-14;

E. N. Thomas, "Toward an Expanded Central Place Model," *Geographical Review*, LI (1961), pp. 400-411;

R. C. Mayfield, "The Range of a Central Good in the Indian Punjab," *Annals*, Association of American Geographers, LIII (1963), pp. 38-49;

M. W. Mikesell, "Market Centers of Northeastern Spain," *Geographical Review*, L (1960), pp. 247-251;

B. W. Hodder, "The Distribution of Markets in Yirubaland," *Scottish Geographical Magazine*, LXXXI (1965), pp. 48-58;

R. A. Murdie, "Cultural Differences in Consumer Travel," *Economic Geography*, Vol. 41 (1965), pp. 211-233;

A. Pred, "The Concentration of High-Value-Added Manufacturing," *Economic Geography*, Vol. 41 (1965), pp. 108-132;

M. H. Yeates, "Some Factors Affecting the Spatial Distribution of Chicago Land Values," *Economic Geography*, Vol. 41 (1965), pp. 57-70;

A. Getis and J. Getis, "Christaller's Central Place Theory," *Journal of Geography*, LXV (1966), pp. 220-226. (See also other articles on urban geography in the same issue of the *Journal*.)

A CONCEPTUAL STRUCTURE FOR PRODUCTION GEOGRAPHY

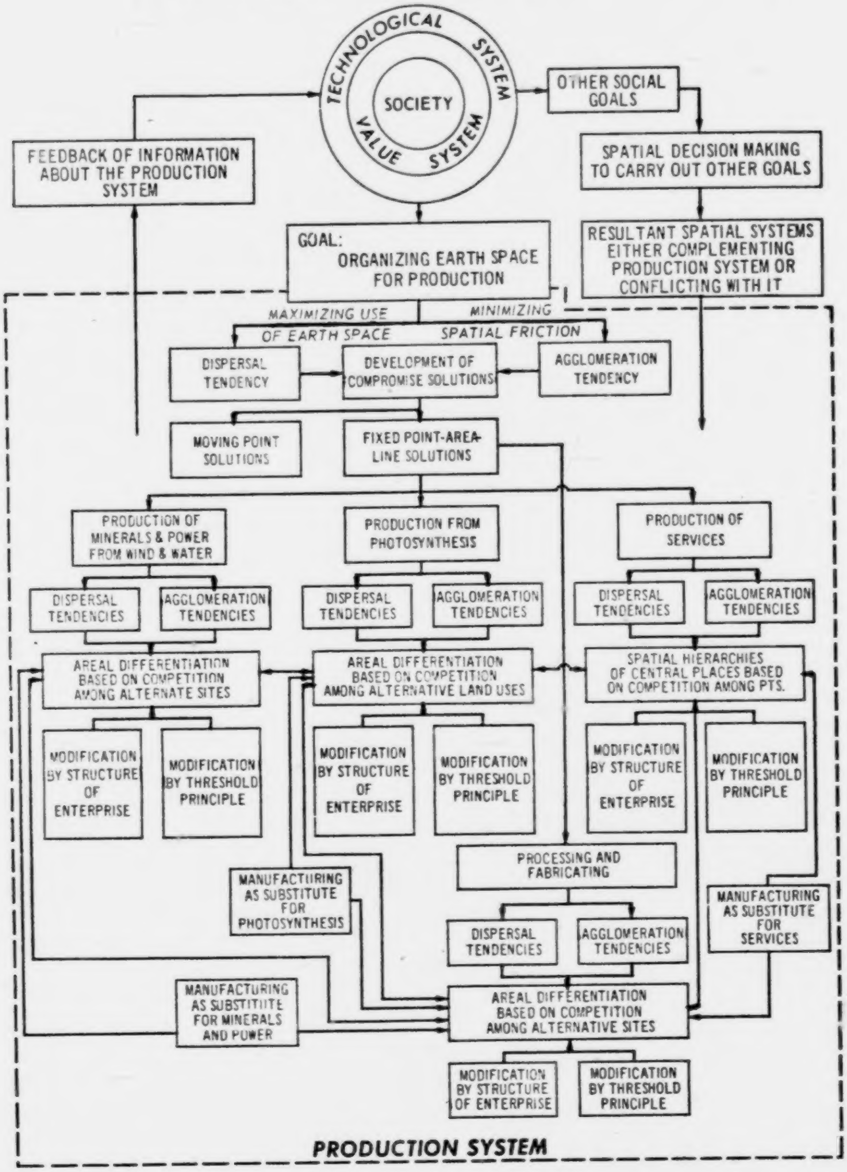
TECHNOLOGICAL SYSTEM
SOCIETY
VALUE SYSTEM
OTHER SOCIAL GOALS
SPATIAL DECISION MAKING TO CARRY OUT OTHER GOALS
RESULTANT SPATIAL SYSTEMS EITHER COMPLEMENTING PRODUCTION SYSTEM OR CONFLICTING WITH IT
FEEDBACK OF INFORMATION ABOUT THE PRODUCTION SYSTEM
GOAL: ORGANIZING EARTH SPACE FOR PRODUCTION
MAXIMIZING USE OF EARTH SPACE
MINIMIZING SPATIAL FRICTION
DISPERSAL TENDENCY
DEVELOPMENT OF COMPROMISE SOLUTIONS
AGGLOMERATION TENDENCY
MOVING POINT SOLUTIONS
FIXED POINT-AREA-LINE SOLUTIONS
PRODUCTION OF MINERALS & POWER FROM WIND & WATER
PRODUCTION FROM PHOTOSYNTHESIS
PRODUCTION OF SERVICES
DISPERSAL TENDENCIES
AGGLOMERATION TENDENCIES
DISPERSAL TENDENCIES
AGGLOMERATION TENDENCIES
DISPERSAL TENDENCIES
AGGLOMERATION TENDENCIES
AREAL DIFFERENTIATION BASED ON COMPETITION AMONG ALTERNATE SITES
AREAL DIFFERENTIATION BASED ON COMPETITION AMONG ALTERNATIVE LAND USES
SPATIAL HIERARCHIES OF CENTRAL PLACES BASED ON COMPETITION AMONG PTS.
MODIFICATION BY STRUCTURE OF ENTERPRISE
MODIFICATION BY THRESHOLD PRINCIPLE
MODIFICATION BY STRUCTURE OF ENTERPRISE
MODIFICATION BY THRESHOLD PRINCIPLE
MODIFICATION BY STRUCTURE OF ENTERPRISE
MODIFICATION BY THRESHOLD PRINCIPLE
PROCESSING AND FABRICATING
MANUFACTURING AS SUBSTITUTE FOR PHOTOSYNTHESIS
MANUFACTURING AS SUBSTITUTE FOR SERVICES
DISPERSAL TENDENCIES
AGGLOMERATION TENDENCIES
MANUFACTURING AS SUBSTITUTE FOR MINERALS AND POWER
AREAL DIFFERENTIATION BASED ON COMPETITION AMONG ALTERNATIVE SITES
MODIFICATION BY STRUCTURE OF ENTERPRISE
MODIFICATION BY THRESHOLD PRINCIPLE
PRODUCTION SYSTEM

Fig. 2

in the tribe, village, region, or nation, may increase or decrease over time, directly affecting the system.

It is assumed that the social body has a value system and that the implementation of its goals must be "filtered through" this value system. The nature of the value system will determine the relative priority of the production goal in relation to other goals (for example, the goal of preparing for life after death may or may not take precedence over the goal of organizing the earth for production of things to be used in this life). The value system will affect the ways in which the goals are perceived and stated and the ways in which the technology is used to implement the goals. It is further assumed that the value system of the society may change over time, though usually slowly, and that this occurs particularly through contact between societies.

It is assumed that the group has a shared technological system including both "hardware" (artifacts) and "software" (characteristic modes of behavior, particularly behavior associated with the use of the artifacts). It is assumed that the implementation of the society's goals must "filter through" the technological system. The "practicality" of implementing a particular goal will depend on the state of the technology available at a particular time. It is assumed that the technological system will change over time, but more rapidly in some situations than in others (a distinctive feature of modern urban-industrial society is that it has specific mechanisms for feedback between the production system and the technological system, so that technological change is self-perpetuating and often accelerative).

It is assumed that in seeking to organize the earth's surface for production that the tribe, village society, or modern industrial nation, will face a dilemma. On the one hand, it can increase production by spreading out over the surface of the earth to use to the maximum the available space and the available earth resources of that space. But on the other hand, it can increase production by concentrating its efforts and reducing spatial friction to a minimum. Hence, the people must make some kind of compromise or "trade-off" between maximizing the use of earth space and minimizing the losses of spatial friction. The particular compromise reached at any point in time will depend on the relative importance of the production goal to the society, other aspects of the value system, and the state of the technological system. Over time, new spatial compromises may be reached.

One cluster of solutions to the spatial dilemma may be called moving point solutions. Examples include nomadic hunting and gathering, nomadic pastoralism, milpa, suks, and fairs. Examples from contemporary urban-industrial society include some lumbering and mining camps, factory ships, some aspects of racing, and some aspects of the resort industry. The moving point solution involves moving the production group (as a spatially cohesive group) from place to place over the earth's surface, sometimes in seasonal cycles of movement, sometimes in longer cycles, and sometimes in non-repetitive paths. It is assumed that a given group may, over time, change its option from a moving point solution to the fixed point solution, or vice versa, and may develop new and different mixtures of the two. However, it is also assumed that such transitions have profound implications for the nature of the society, its value system, and its technology.

Another cluster of solutions to the spatial dilemma may be called fixed point solutions or, more accurately, fixed point-area-line solutions. Thus, although it is possible to develop models with only one fixed point (as in the von Thunen model) for analytical purposes, observable societies usually have several fixed points (and/or areas) of production and these are linked together by lines (flows, linkages, interchanges, interaction, etc.). The number of such fixed points (and/or areas) and the number and frequency of line linkages varies with the society's population size, goals, value system, and technology (including its understanding of variability in earth resources and its transport technology).

For each production type, such as mineral production, the producers face the spatial dilemma: the advantages of dispersal versus the advantages of concentration or agglomeration. However, the specific nature of the centrifugal-centripetal attractions vary from production type to production type. In the case of mining, and the like, dispersal is encouraged by the very wide occurrence of minerals, wind, and potential water power sites. Agglomeration is encouraged by areal variation in resource quality, by the state of exploration (nearby areas are usually most thoroughly explored), and threshold principles or economies of scale operating at the level of the individual mine or power site. The significance of dispersing tendencies and agglomerating tendencies varies from mineral to mineral, except as differing minerals may be areally associated in occurrence. Differing minerals may be substituted for each other to varying degrees (depending on the technology and the value system) so that the pattern of areal differentiation of production which emerges is a general centrifugal-centripetal compromise based upon competition among many sub-systems of mineral production. This pattern of areal differentiation is modified by the nature of the mining enterprises (large corporate mining systems may operate quite differently spatially than small firms) and by threshold or economy-of-scale principles operating at the level of community or district. The areal differentiation pattern is still further modified by the kind of spatial compromises being made in other types of production (farming, services, manufacturing) and by the possibilities of substitution inherent in manufacturing. For example, Weberian location theory stresses that those types of processing involving great reduction in weight and/or volume tend to occur near mining areas. But the converse (seldom stressed) is also true: if a processing plant is nearby, an existing mine is likely to be maintained and/or new mining potentials sought in the vicinity. In short, the mining may move toward processing as well as processing moving toward mining sites. On the diagram, mining has been placed at the left because it is the most widely dispersed productive activity in occurrence. However, modern mining could, with equal logic, have been placed on the extreme right of the diagram since in volume of production it is often very highly agglomerated. In short, the mining industry represents the extreme in choices made along the dispersal-agglomeration continuum.

For the purposes of the diagram, agriculture has been divided into its components of crop production and animal production. The locational problem is usually quite different in the two cases. Crop production uses photosynthesis and hence requires much space whereas animal production can occur in a point pattern similar to that of manufacturing. Hence animal production, on the diagram, is grouped with processing and fabricating while crop production is grouped with other forms of production dependent on photosynthesis (grazing on ranges, forestry). (At larger scales than those used in this analysis, the point pattern appears in crop production, too. That is, each wheat plant is at a point.)

Photo-synthetic production tends toward dispersal because of the wide availability of sunlight and other appropriate land qualities; it tends toward agglomeration because of transfer costs, including perishability in some cases. In special cases, limited supplies of land with special characteristics may also encourage agglomeration. However, the locational balance between the two forces varies for each type of photo-synthetic production. One aspect of the locational compromise is that intensity of land use usually decreases with dispersal; another aspect is that competition among various types of photo-synthetic production for space-use (competition ultimately based on the value system) tends to create photo-synthetic zonations around major consumption points (von Thunen analysis). The general pattern of areal differentiation resulting from the balance of centrifugal-centripetal forces is modified by the nature of enterprise (e.g., animal farming may be combined with crop farming; production from farm woodlots is quite different than from major forestry firms) and by threshold or economy of scale principles operating at the community or district level (example: joint use of storage or marketing facilities). The pattern is further modified by the kind of spatial compromises being made in other types of production (mining, processing and fabricating, and services). For example, though great weight-volume loss in processing tends to pull processing plants near certain crop regions, the converse is also true. The existence of a processing plant in an area is likely to encourage agglomeration of certain types of crop production nearby. It is assumed, in the diagram, that changes in the value system or technological system of the society will cause shifts in the locational pattern.

All services tend toward agglomeration, i.e., concentration in central places. However, the agglomeration tendency is more marked for some services than others. Generally speaking, the more specialized the service provided, the greater the number of customers needed to support a given service establishment (the threshold principle). On the other hand, customers are usually willing to travel farther for some services than for others, especially farther for infrequently used services (the range principle). The resultant spatial compromise produces a hierarchal system of central places in which some services are found in many widely dispersed central places whereas others are found at only a few centers. The hierarchy may be observed at a variety of scales both within cities and within systems of cities extending over wide areas. The details of the central place system are modified by the characteristics of enterprises (e.g., barber shops often serve more than one function) and by the threshold or economy of scale principle operating at the community or district level. The central place system is further modified by the nature of locational choices made in mining, photo-synthetic production, and processing and fabricating (for example, the central place pattern of the mining area of Southern Illinois appears distinctive). The question is particularly difficult in the case of manufacturing because many establishments are engaged in both manufacturing and the production of services (example: a dairy). Often, a manufactured product can be substituted for a service (example: a hi-fi record for a symphony performance). In that case, manufacturing may allow a usually agglomerated service to be dispersed widely. This, in turn, may increase demand for the service itself. Manufactured products may also be used to "store" services, making them available at all times.

Processing and fabricating includes handicrafts as well as manufacturing. Handicrafts, developed in homes, are very widely dispersed. Agglomeration begins with the transfer of handicrafts from homes to small shops. Agglomeration sharply accelerates with the development of large shops (factories). This process of agglomeration has gradually affected more and more handicrafts but is still far from complete in any existing society. Until relatively recently, most animal production was of a "handcraft" type and consequently was usually widely dispersed. However, the concentration in large "shops" (specialized farms) has begun and "factories" (specialized farms with large production) are also developing. Even "factory farm clusters" are emerging. The ultimate agglomeration possible in animal production is difficult to forecast.

Major agglomerative forces in processing and fabricating include the threshold or economy of scale principle (operating at several levels, from the individual plant to regional complexes), market transfer costs, and the special effects of certain types of transport networks. Two agglomeration factors which are often cited, skilled labor and large power sources, appear to be highly significant only at certain stages in the development of the production system. The major dispersal tendency is input transport cost. Widely dispersed natural resources such as a favorable climate may encourage dispersal through reducing operating costs. Many factors encouraging dispersal are of significance only in certain parts of the world and then only at particular stages of economic development (for example, a widely dispersed pool of "cheap labor" in an area of surplus agricultural labor may continue to attract dispersively only for a generation or two). Agglomerative and dispersive forces affect each industry differently. Particular types of manufacturing are located as they are not only on the basis of agglomerative-dispersive forces affecting that industry alone, but also because of competition among various producers for the available alternative sites. This general pattern is modified by the entrepreneurial factor (for example, the location patterns in capitalist states may differ from those of socialist states; large firms may behave differently than small ones). It is further modified by the effects of locational choices being made in other production types (mining, photo-synthetic production, and services). Changes in the value system and the technology will result in changes in the locational pattern.

In the diagram, it is assumed that the overall production system is linked together by a transport and communication network and that changes in the flow pattern on the network (or development of new links and/or abandonment of old links) will alter the dispersal/agglomeration balance at each of the production points and areas. Conversely, changes in the location of production points (and areas) resulting from changes in the dispersal/agglomeration balance for a particular industry may be translated to the whole production system through their effect on the transport network. Thus, there is a continuing feedback between the system of production points (and areas) and the system of lines linking the points together (the transport system). Changes in the transport network may be route changes, changes in flows over routes, or the development of new transport technology. The development and acceptance of a new transport technology depends on the value system of the society.

In the diagram, it is assumed that the production system will cause changes in the physical and biological environment and that some of these changes may be irreversible. Some of these environmental changes may stabilize the production system while others disrupt or weaken the system. In any case, there is a continuing feedback between the production system and the physical and biological environment. Changes may be perceived by the producers. Whether action is taken to alter the production system accordingly will depend on the value system. However, other changes may be below the level of awareness or perception of the society and hence no action may be taken. The relative slowness of many physical and biological processes is thus of great significance.

It is assumed that many of the artifacts associated with fixed point production systems are highly immobile. The greater the proportion of the society's capital is in the form of such immobile artifacts, the more the system will tend to stabilize spatially. However, some spatial flexibility in productive behavior is allowed by the use of old artifacts for new purposes. In such cases, the point (area) system may remain more fixed than the flows over the line system. Obsolescent artifacts may be destroyed to free the space they occupy or the artifact may be allowed to occupy "dead" productive space. Choices made on the maintenance or destruction of artifacts will depend on the value system.

It is assumed that the "software" aspects of the technological system may be as spatially important as the "hardware" (artifacts) and are often equally immobile. Hence, these may tend to stabilize a production system. Land ownership patterns are a good example.

It is assumed that there is a feedback of information about the production system and its sub-systems to the society and that this feedback may result in alterations in the system. The value system and communications technology affect the effectiveness of this feedback. The various forms of "planning" and "development" in modern societies generally involve (1) more accurate, more detailed, and more continuous reporting on the system, (2) an attempt to articulate goals and values more clearly, and (3) a conscious program for modifying the functioning of the system. That is, there is increasing awareness that society is, in fact, self-directed.

As stated earlier, it is assumed that the society has multiple goals: the production goal is only one among several. For example, dominance over other peoples, whether military or cultural, might be a major goal. Or, perpetuation of the ways of the ancestors might be a major goal, with production viewed only as a means toward that end. The implementation of other social goals will develop a parallel spatial system or systems. These may tend to stabilize the spatial production system or to disrupt it. In any case, there is feedback among all spatial systems developed by a particular society.

Finally, it is assumed that no society exists in isolation (unless one thinks in terms of a world society, a debatable topic). Therefore, the ultimate limit on the dispersal tendency of the production system of the society is the resistances of other societies competing for the use of earth space.

The Application of the Production Diagram

The production diagram has been designed to be applicable to most societies, past and present, and at a variety of scales. However, it is not applicable at the world scale unless due allowances are made for the stratification of production systems in many areas. The diagram has been designed to be a general framework into which most existing location theory can be set and from which many of the existing "holes" in production location theory can be identified.

In the development of introductory courses, it should prove useful as a general conceptual structure for the production phases of a comprehensive introductory course. If the views expressed at the beginning of this paper are valid, such a conceptual structure should be developed inductively in introductory courses and not deductively. Thus, the diagram would have to be "translated" into a series of student experiences with geographic data from which he could gradually develop the kind of understandings involved in the diagram.

CONTINUING AND NEW VIEWPOINTS IN THE GEOGRAPHY OF ECONOMIC ACTIVITY[1]

Richard S. Thoman, Queen's University

It would appear that an instructor preparing an introductory course in economic geography ought to be cognizant of four points:

(1) The relationship of that course to the methodology of field.

(2) The contribution of the course to participating students.

(3) The role of the course in the particular college or university in which it is to be offered.

(4) Certain basic ideas and methods that, with varying degrees of stress, should be included.

Point four logically follows from point one, and could well have been so placed in this generalized discussion. It has been allocated the final position here because the degrees of emphasis on essential ideas by individual instructors will depend appreciably upon their respective evaluations of points two and three.

The Introductory Course and Methodology of Economic Geography

An introductory course, in economic geography as in any other subject, should reflect implicitly, and present explicitly, the existing methodology of the field to the maximum degree of a student's ability to comprehend such material. I shall explain later in this section that I believe an introductory course also should carry additional responsibilities in certain institutions and under certain conditions.

We need not elaborate upon the obvious truth that the methodology of economic geography is undergoing change. I prefer to view this change from an Hegelian framework of reference, with what might be called "traditional" economic geography as the Hegelian Thesis, "revisionist" economic geography as the Antithesis, and the derivative of the interaction between these two rather distinct realms of thought as the Synthesis.

We probably agree that the traditional point of economic geography in the United States and Canada has been: (A) more or less global in scope and initial approach, (B) primarily inductive, (C) given mainly to qualitative interpretation, evaluation, and comparison, and (D) concerned especially with primary and secondary economic activities. Although comparative, it did dwell at some length on the unique or the unusual aspects of the distribution and functioning of economic activity, and seldom attempted more than a cross-evaluation of three generic features, whether these were topical or regional. The basic outlines of most college texts, and presumably of most courses, emphasized either the commodity approach, the occupation approach, or the regional approach, with both of the two others apparent in a final organization structured on the chosen approach.

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[1] This paper has been prepared with particular attention to experience in, and needs of, geographical courses in colleges and universities of the United States and Canada. Its bibliography may be found in: Richard S. Thoman, The Geography of Economic Activity (New York: McGraw-Hill, 1962).

Without desiring to initiate an unnecessary methodological discussion, one may state, anticipating some measure of objection and qualification, that: (A) the viewpoint of the revisionist school has been particularly one of aggregation from local conditions and circumstances, (B) the method has been prevailingly deductive, with stress on quantitative techniques, and (C) emphasis has been upon universal aspects, with attention to the unusual or unique only insofar as these represent important features which cannot be explained satisfactorily by hypotheses, and (D) interest has been especially keen in the tertiary activities, with many individual scholars specializing in urban as well as economic geography.

My own concept of the result of this interaction is that of the Hegelian Synthesis. The basic task of economic geography is essentially unchanged. That task is the understanding of the spatial distribution and interrelationships of economic activity as carried on within the milieu of the earth's varied cultural and natural settings. Where transport costs of fixed market places and other measurable criteria can be applied to such understanding, they should be so applied. Where, in whole or in part, these factors are either not known or are found to be of moderate importance, economic activity is still to be evaluated in an area if man is there, for gaining a livelihood is something nearly all men everywhere must do. Inasmuch as the scope of economic geography is world-wide, the introductory course ought to reflect that scope, and not be limited to those aspects for which we may have developed a more thorough means of appraisal. Therefore a modern introductory course in economic geography that is worthy of the name ought to reflect both traditional and revisionist thinking in the methodology of the field. To omit the important inductive evaluations and classifications of agriculture and manufacturing, as examples, that were formulated before the onset of revisionism would be as misleading and indeed as foolish as to omit the objective presentation of what has been accomplished during the past decade in adding new concepts and methods.

The Introductory Course, the Student, and the Institution

In this general discussion, we shall combine points 2 and 3 (page 45) because the importance of each is realized only when applied to specific circumstances. Each of us is aware, of course, of the vital roles of introductory courses at his or her college or university, whether with respect to student or institutional needs. The numerical importance of such introductory courses – in which economic geography provides but one of several approaches – was indicated in the latest summary of trends [*American Geography, 1960-63: Education, Employment and Other Trends*, A.A.G., 1964], p. 2, where 42 per cent of all enrollment in undergraduate geography was shown to be in the introductory courses. We know that the student backgrounds for these introductory courses are, on the whole, unsatisfactory; and it was to overcome such deficiency, at least partially, that the High School Geography Project has come into being. We know also that, for a very large number of students, the introductory course in geography is only a service course to be taken once in the undergraduate schedule. These and lesser considerations apply also to institutional needs, which include the size and orientation of specific institutions, departments, staffs, etc. Clearly each member of a department with two or three personnel must give extreme care towards achieving a balance between specialized and general knowledge, whereas individual faculty members in larger departments have the opportunity to specialize more, both as to content and method. Analogous generalizations can be applied to course offerings from deparments in these two categories, or variations thereof.

I do believe very firmly that geography has a responsibility at some point in high school or early college work to make the young student aware, mainly in a qualitative way, of the world about him. Ideally, this awareness can come in a well-taught regional course—a course in which the distribution and functioning of economic activity almost invariably is a fundamental component. If this very important background information and conceptualization has not been learned adequately in high school, and if an institution or department chooses economic geography as its initial course, such a course should not be divorced completely from providing a background against which a student can read his daily paper more effectively. It is true that such a course may not provide the focused introduction to the field to the degree that would result if it were oriented specifically to the subject, but the larger number of students who take geography only once in their college careers will benefit, I am certain, by gaining a mature understanding of the distribution of the economic strength of a given country, as they will by applying Weberian analysis to location of manufacturing plants in a local community. If time does not permit adequate coverage of both ideas, I would postpone detailed application of Weberian analysis until a subsequent course. Unlike most other disciplines geography lends itself suitably to providing a background for understanding world conditions and events because this subject alone logically extends through the sciences and into the humanities while emphasizing present-day conditions.

Basic Concepts and Methods

Although I would be among the last to champion thorough standardization of all introductory courses in economic geography, I am convinced that certain ideas and methods should be presented to the degree decided by the individual instructor. These include: (A) definition of the subject, (B) uneven distribution of economic activity over the face of the earth, (C) uneven distribution areally of natural and cultural features with which economic activity is associated, (D) importance of historical perspective, (E) the significance of interrelationships, (F) spatial differences in economic efficiency, (G) differing levels of observation, (H) case studies, (I) problems, and (J) continuing and new approaches and methods. The ten points are not necessarily presented in a conceptual priority or prerequisite sequence.

Economic geography takes its name from both geography and economics. It has developed essentially within geography, but has received some very fundamental thinking from economics. It belongs to geography, from which it receives an interest in the areal distribution of cultural and natural features and interrelationships among those features. It takes from economics an emphasis upon man's efforts to maximize his satisfaction of material needs and wants—upon economic activity. Therefore, in my view, the introductory course ought to present the subject as a study of the earth-space aspects of man's efforts to maximize satisfaction of his material needs and wants, with particular attention to relevant natural and cultural considerations associated with such activity.

The global distribution of primary, secondary, and tertiary production, of consumption and storage, and of transport media providing linkage capability are realities which can be tabulated, classified, and mapped. This aspect of economic geography is an inheritance from traditional thinking, and to discard it would be to throw out the baby with the bath water. I am not asking that the student memorize an atlas before he proceeds into economic geography, nor am I asking that this aspect of the field necessarily come first in the introductory course, although I think it should come early. I am stating that to proceed directly into analysis, especially by aggregating from lower levels of observation, without first having obtained an insight into recognized continental and global patterns, is to consider the trees without viewing the forest. A scientist is not insensitive to truth from whatever reliable method.

Similarly, the global distribution of relevant natural and cultural features, including non-economic cultural features, may be important to understanding the location and functioning of economic activity. We need not become unduly involved in argument as to whether (A) a natural feature is truly natural, or (B) non-economic cultural features are useful in considering the economic geography of an area. I trust that we are discussing at a level of assumption in which we consider a natural feature to be prevailingly natural, and in which we realize that non-economic cultural features may play important, although sometimes indirect, roles in both consumption and production as evaluated in economic geography. Some economic geographers refer to these natural and cultural features as assets, and liabilities or constraints, to what otherwise might obtain from theoretical models. I have no objection to this viewpoint, and shall elaborate upon it later. Whatever the specific approach, relevant natural and cultural features ought not to be omitted from the introductory course in economic geography.

Although our task in economic geography is chiefly to explain what exists today and perhaps to predict what will exist tomorrow, we cannot safely ignore qualitative interpretation of the past. I am concerned that, with the determination of some of us to be rigorously scientific and with a multiplicity of current problems and interrelationships virtually commanding our attention, we may neglect the time dimension. True, economic geography is not economic history, and I cannot see a place in an introductory course of economic geography for economic history as such; but I do see the need for frequent reference to history in specific interpretations.

Interrelationships among geographical phenomena quite properly are becoming increasingly important to economic geographers, and deserve heavy emphasis in the introductory course. We are well aware of both the horizontal and vertical nature of such interrelationships, although we have emphasized the horizontal linkages in work done to date. Indeed, the unit of organization, the functional region, central place theory, and human organization of space are all expressions of horizontal linkages involving goods (energy, raw and semifinished materials, and products), people and services, and communications. One might add currency flow as a consideration in its own right. We haven't done very much yet with vertical linkages, which tend to be somewhat ecological. In my own thinking, these vertical interrelationships, rather than specific natural or cultural features, may emerge in economic geography as truly basic assets and constraints to hypotheses derived from models utilizing horizontal linkages as primary criteria. However we conceive of vertical interrelationships, we ought not to ignore them in the introductory course.

Spatial differences in economic efficiency, or regional variations in economic development, reveal the degree of success man has achieved within specific areas in his effort to maximize satisfaction of material needs and wants. In other words, studying such differences provides a very important means of assessing how well man has conceptualized, and wrought, optimum conditions and circumstances in economic geography.

Economic geography lends itself particularly to different levels of observation and the hierarchal tendencies that may be associated with a pyramiding of levels. I prefer to state the concept early in the introductory course, and thereafter to refer to specific examples, sometimes viewing these in association with higher and/or lower levels, and sometimes considering them as individual cases more or less standing alone.

The case study, applied in various ways and at different levels of observation, also has a place in the introductory course in economic geography. The primary value of such a study is that it focuses attention upon specific situations and circumstances, thus adding a dimension to a course that usually is presented mainly through generalizations. If a case study can be truly representative of a generic category, it may be all the more valuable. If not, it still may be useful in providing an insight into the location and functioning of a specific economic activity, or portion thereof, as viewed against a background of generalizations emphasized in the course.

A case study may or may not be associated with a specific problem. The use of a problem drives home to the student that, although there is much in the way of background information, concepts, and approaches to be mastered in economic geography, the subject fundamentally is analytical. I find that problems associated with planning at various levels of observation, approached from the viewpoint of the specialist in locating individual concerns as well as the specialist in regional evaluation, interest my students very much.

Finally, an introductory course in economic geography worthy of the name ought to emphasize any valid idea, regardless of the length of time it has been part of the accepted methodology. In preparing the first edition of The Geography of Economic Activity, I stressed certain concepts not given much attention in most texts then current. Outstanding among these concepts were location theory, spatial differences in economic development, and consumption as an economic activity. The long-range plan for the text was to introduce more new ideas, and more emphasis on these three ideas, with each revision, while retaining a valuable inheritance from traditional economic geography, thus making the student aware of the full spectrum of considerations to the degree of his ability to comprehend. The revision, now under way, will include more emphasis upon each of the three ideas mentioned above, plus greater stress on the roles of tertiary activities. A paperback supplement, written by a specialist in quantitative methods, will present the use of such methods in economic geography. Meanwhile, I am continuing to retain the traditional ideas incorporated into the first edition and outlined in points B-E and G-I, point four, above, in an effort to arrive at a textbook presentation of the Hegelian Synthesis in economic geography.

INTRODUCTORY ECONOMIC GEOGRAPHY: SELECTED IDEAS OR THOROUGH COVERAGE?

Edward J. Taaffe

Since this paper and those accompanying it are destined to be labeled as position papers, it seems appropriate to delineate a reasonably visible position right at the outset. The position to be taken is simply that an introductory economic geography course should encourage students to think critically about *why* economic activities are located where they are. Further, it is held that such critical thinking is better developed by a course explicitly organized around a selected set of ideas and examples than by a course organized with the goal of providing relatively complete coverage of economic activities.

Ideas or Coverage: Theory or Description

An introductory course in any field is, above all, an exercise in selection. This selection, in turn, is related to the instructor's basic objective. Should his decision to include or exclude a discussion of wheat or copper, for example, be based on the desire to provide reasonably thorough world coverage, or on the desire to exemplify certain basic ideas in geography? If the logical, sequential presentation of an interrelated group of ideas were the objective, wheat or copper would be discussed only if it were felt that these commodities provided good illustrations of these ideas and the complexity of their expression in the real world. If thorough coverage were the objective, the decision to include wheat and copper would be based on their importance as world commodities, and the statements made about them would not necessarily be designed to aid the coherent development of an interrelated group of ideas.

Although there is clearly a trend away from descriptive world coverage toward higher levels of generalization, it is a slow and timid one. The example is still wagging the dog in our textbooks and students are still asked, even in their graduate examinations, to comment on a particular distribution and what it exemplifies rather than to demonstrate their understanding of a particular theory and to select some examples. Although the reasons for the trend away from relatively detailed coverage in economic geography are well-known, they still bear some repeating. First, the idea of complete coverage is itself a vague and mystical notion. Do we follow the path of the two massive compendia produced by the Woytinskys?[1] These stand as monuments to the enormity of the task of attempting encyclopedic completeness. If we devote three pages to the world distribution of mica, how many pages should we devote to rye or to irrigation agriculture? Obviously, all coverages are going to be selective and we are once again left with the problem of criteria. Second, the inventories which characterize much work in introductory economic geography are self-defeating. There is simply too much unrelated material to remember. If we were to think in terms of residual ideas, or what the student retains five years after having taken such a course, we would find virtually all of the pattern detail had vanished unless it had been clearly related to a relatively few central ideas. Typically, the student will have only a few sadly scattered memories of minutiae, often representing items rendered vivid by their relation to the instructor's store of colorful anecdotes. The classic example of the futility of teaching facts in a virtually idea-less context has been in grammar school geography where the most formidable factual arrays have been set before students on a relentlessly country-by-country basis. This week's detail about Ecuador usually eradicates the previous week's inventory of Colombia. The result has been the absence of residual ideas even about place geography possessed by these students as they enter college.

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[1] Wladimir S. Woytinsky and Emma S. Woytinsky, *World Population and Government: Trends and Outlook* (New York: Twentieth Century Fund, 1953), and *World Commerce and Government* (New York: Twentieth Century Fund, 1955).

Some Selected Theories

If we were to concentrate less on factual coverage and more on the development of higher level generalizations or theories, we would leave the student with a larger and more useful set of residual ideas. If he had been applying these theories to selected spatial distribution he would have developed some attitudes during the course which would subsequently condition the way in which he viewed the changing geography of his local area, country and the world. Our most useful theories and generalizations are those which provide help in thinking critically about why things are where they are. Such theories provide a rich and condensed set of statements which may be applied to many types of patterns at different times, in different cultures, and on different scales.

The ideas of Christaller and contemporary urban geographers represent critical thinking about spatial systems of cities.[2] Students who are conversant with some of these ideas will be able to detect a pattern in their own observations of cities, towns and villages. John Brush's study of Southwest Wisconsin is an excellent example of the insights to be gained into the spatial structure of settlement by applying the classical Christaller ideas to a specific area.[3] Brian Berry and others have modified these ideas and used them to portray the retail structure of nucleated, ribbon and planned retail centers within the city.[4] Similar patterns have been observed in India, China, Uruguay and elsewhere.[5]

Location theory provides much help in thinking critically about why things are where they are. An empirical study of the changing location of the iron and steel industry is enriched by being closely related to the classical work of Alfred Weber as well as to some selected aspects of the more recent work of Walter Isard and the Regional Science group.[6] The effects of changing weight-gain and weight-loss ratios, tapering freight rates, regional labor-cost differentials, economies of scale and of agglomeration have all been referred to in such empirical studies as Kennelley's work on the iron-steel industry of Mexico,[7] Isard's study of the historical development of the U.S. iron and steel industry[8] and Pred's study of the location of high-value manufacturing[9].

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[2] Walter Christaller, *Central Places in Southern Germany*, translated from *Die Zentralen Orte in Süddeutschland* by Carlisle W. Baskin (Englewood Cliffs: Prentice-Hall, 1966); Brian J. L. Berry and Allan Pred, *Central Place Studies: A Bibliography of Theory and Applications*, (Philadelphia: Regional Science Research Institute, 1961 and 1965); Philip M. Hauser, and Leo F. Schnore (eds.), *The Study of Urbanization* (New York: Wiley, 1965).

[3] John E. Brush, "The Hierarchy of Central Places in Southwest Wisconsin." *Geographical Review*, Vol. 43 (1953), pp. 380-402.

[4] Brian J. L. Berry, *Commercial Structure and Commercial Blight*, (Department of Geography Research Paper No. 85; Chicago: Chicago University Press, 1963), and James Simmons, *The Changing Pattern of Retail Location*. (Department of Geography Research Paper No. 92; Chicago: Chicago University Press, 1964).

[5] Robert C. Mayfield, "A Central Place Hierarchy in Northern India" (paper presented at NAS-NRC Symposium on Quantitative Problems in Geography; Chicago, 1960): G. William Skinner, "Marketing and Social Structure in Rural China," *Journal of Asian Studies*, Vol. 24 (1964), pp. 3-43, and Vol. 25 (1965), pp. 195-228, 363-399. David E. Snyder, "Commercial Passenger Linkage and The Metropolitan Nodality of Montevideo," *Economic Geography*, Vol. 38 (1962), pp. 95-112.

Von Thunen's early work was used by Chisholm to comment critically on selected agricultural patterns[10] and by Harvey in his study of the historical development of hop-growing in Britain[11]. Later modifications by Dunn[12] and others have increased the potential usefulness of some of the theories of agricultural land use in the analysis of spatial patterns of agricultural activity.

Any interpretation of transporation flows and networks benefits from a consideration of Ullman's ideas of spatial interaction, complementarity and intervening opportunity[13] as well as from the more recent theoretical work in transportation geography by Garrison and others.[14]

An introductory economic geography course could thus be organized around a set of ideas or theories related to reasons underlying the location of cities, manufacturing, agriculture and transportation. Once the theory has been developed, empirical studies could be selected so as to provide exemplification in different contexts.

But How About the Real World. . . ?

There are some recurrent refrains which seem to accompany efforts to place greater stress on theory in economic geography. Two dichotomies deserve particular attention: the unique versus the general and theory versus the real world. The idea that geographers are more interested in the unique than the general is a difficult one to support when it is realized that they are two sides of the same coin. The unique can be defined only in terms of the general. What we decide is unique is simply that which falls outside

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6. Alfred Weber, *Theory of the Location of Industries*, trans. from German by Carl J. Friedrich (Chicago: University of Chicago Press, 1957); Edgar M. Hoover, Jr., *Location Theory and the Shoe and Leather Industry* (Harvard Economic Studies, Vol. 55; Cambridge: Harvard University Press, 1937); Walter Isard, *Location and the Space Economy* (New York: Wiley 1956); and *Methods of Regional Analysis* (Technology Press Book, Regional Science Studies; Cambridge: M.I.T. Press, 1960).

7. Robert A. Kennelley, "The Location of the Mexican Steel Industry," *Revista Geografica*, Tomo XV (1954) and Tomo XVII (1955).

8. Walter Isard, "Some Location Factors in the Iron and Steel Industry Since the Early Nineteenth Century," *Journal of Political Economy*, Vol. 56 (June, 1948), pp. 203-213.

9. Allan Pred, "The Concentration of High-Value-Added Manufacturing," *Economic Geography*, Vol. 41 (1965), pp. 108-132.

10. Michael Chisholm, *Rural Settlement and Land Use* (London: Hutchinson University Library, 1962).

11. David Harvey, "Locational Change in the Kentish Hop Industry and the Analysis of Land-Use Patterns," *Transactions and Papers of the Institute for British Geographers*, No. 33 (1963), pp. 123-144.

12. Edgar S. Dunn, Jr., *The Location of Agricultural Production* (Gainesville: University of Florida Press, 1954).

13. Edward L. Ullman, *American Commodity Flow* (Seattle: University of Washington Press, 1957).

14. William L. Garrison and Duane F. Marble, *A Prolegomenon to the Forecasting of Transportation Development* (Evanston: The Transportation Center at Northwestern University, 1965).

of our perception of the general. Nothing is inherently unique. As we change our concepts of the general, certain phenomena may change from unique to general or vice-versa. We might say that a unique feature of Columbus, Ohio is the fact that land values tend to fall off with distance from the center of the city. This fact remains unique until we discover that it is a general tendency in cities. Then someone measures the rate of drop-off of land values from the center and we discover the unique fact that in Columbus, there is an anomaly in that land values show a secondary increase around the periphery of the city. This unique phenomenon again becomes general when we learn that most cities exhibit similar tendencies. Thus, we cannot be exclusively concerned with either the unique or the general. Both are essential. We generalize from our initial set of unique phenomena, and with each successive application of the generalization re-define our generalization and re-define as unique a new set of phenomena which should, in turn, provide the basis for a further modification of the general.

The same reasoning applies to the distinction between theory and empirical reality if one substitutes "reality" for "unique" and "theory" for "the general". Theory is distilled from our observation of reality. As in the case cited, we may note from our observation of reality that land values in Columbus fall off with distance. We hypothesize that this is true in another area and proceed deductively to test this hypothesis in that area. As we test if we note certain significant departures and proceed inductively to develop a modified theory of land values from a set of interrelated hypotheses. Obviously a theory which bore no relation to reality would not be a good theory. This does not mean, however, that we should expect reality to conform precisely to the postulates of a given model. For one thing, all models are necessarily generalized. For another, all are in constant process of modification as they proceed through the typical research cycle, although the complexities associated with such modification may be beyond the grasp of beginning students. Thirdly, a model must be judged on its own terms. Unrealistic initial assumptions do not invalidate a given theory. The fact that we never find in reality a uniform transportation surface or a uniform distribution of resources does not affect the basic purpose of the Von Thunen model. It is the underlying tendency for a trade-off to exist between land rent and transport costs which is critical rather than the celebrated diagram which shows the hypothetical results of such a trade-off at a particular point in time with resources, transport and demand held constant. Progressive relaxation of the assumptions of most models may readily be accomplished although, here too, each relaxation adds a new layer of complexity, and the resulting model is more appropriately presented to advanced students.

Even with the highly simplified theories communicable at the introductory course level, geography provides an effective vehicle for demonstrating the interesting interplay between theory and reality. The empirical examples cited above are cases in point as is the more elaborate example of a recent study by Julian Wolpert[15]. He began by applying a normative linear programming model illustrating how agriculture in a part of Sweden would look if the farmers were attempting to maximize profits, then devoted much of his study of an interpretation of the ways in which the model and reality failed to correspond. Similarly, in an introductory course one can explain the workings and logic of a theory at some length then take a selected distribution as a case study, pointing out in an essentially intuitive fashion how the model provides a partial explanation of the distribution's evolution and present expression, and also provides a basis for interpreting additional influences which fall outside the scope of the model. The changing pattern of world production and trade in sugar might be used, first, to demonstrate the low-cost production centers which one would expect to show the highest amount of regional specialization. Then the extreme importance of political linkages would become evident, as discrepancies were noted between actual patterns and the patterns to be expected under complete specialization. By going through such a process, the student is thinking critically about why things are where they are. He is not explaining why in a simple causal fashion since he sees that the model provides only a part of the story. He is encouraged to speculate about the rest of the story and thereby gain a glimpse of the complex web of interdependencies characterizing any real-world distribution.

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[15] Julian Wolpert, "The Decision Process in Spatial Context," *Annals*, Association of American Geographers, Vol. 54 (1964), pp. 537-558.

Generic Generalizations and Spatial Analysis

One type of confusion which arises when the need for theory or higher levels of generalization is discussed is the tendency to think of such generic generalizations as world patterns of climate, agriculture, economic development or even city functions as meeting this need. These are essentially taxonomies or classification systems and as such are quite different from relatively compact highly interrelated statements which may be applied to a wide variety of situations. Although such taxonomies do represent a higher level of generalization of sorts, they may or may not be helpful in encouraging the student to think critically about why things are where they are. On the one hand, they simply may be treated as a device for attaining more complete coverage. On the other hand, these world patterns may be used as an aid in the kind of critical thinking referred to in the case of the world distribution of sugar. Maps of climate, population, level of economic development would obviously be helpful in the analysis of any such spatial pattern. These world patterns may also be treated as problems for analysis themselves if they provide exemplifications of some of the basic ideas around which the course is organized. It should be noted that this sort of treatment of distributions intensifies the need for selectivity. Not only is more time spent on the development of theory but more time is also spent on each pattern used as an example. This gives students an opportunity to carry on a process of spatial analysis involving historical perspective and complex interdependencies as they are reflected in the interplay between the reality of the distribution and the logically consistent generalizations of the theory.

The Spatial View

Running through most of the above discussion has been an emphasis on the spatial view of geography. Although a thoroughgoing methodological discourse is clearly beyond the scope of this paper, the significance of this point of view in economic geography calls for further discussion. William Pattison in his influential paper, "The Four Traditions of Geography"[16], identifies the spatial tradition as well as the man-land, area study and earth science traditions. Although, as stated by Pattison, these are useful distinctions there is some evidence that they are leading to a premature acceptance of a greater fragmentation of the discipline than is necessary. At this point, therefore, it seems worthwhile to examine more closely the spatial view as it relates to at least two of the other views.

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[16] William Pattison, "The Four Traditions of Geography." *Journal of Geography*, LXIII (1964), pp. 211-216.

Obviously, the earth science tradition is not directly relevant, but the man-land relationship tradition also poses a number of problems in relation to the sort of course described above. If this view were to be taken as definitive of the field, it would rule out much of the work which has provided the basis for our existing theoretical structure. Most of urban geography deals with man-man relations rather than man-land relations. Central place theory and location theory carry no explicit reference to the physical environment. When one studies the relation between a settlement pattern and a transport pattern, for example, he focuses on the relation between those two patterns and takes the environment as given, for the purposes of that problem. Even though the environment obviously had to be considered both by settlers and by transport builders, it is not involved in the relation between transport and settlement, and a perfectly valid geographic study may be carried on without involving it. On the other hand, the spatial view of the field by no means *precludes* a study of the relation between transport and the physical environment. In fact, the spatial view makes it more likely that the physical environment will be considered, since there are so many ways in which significant environmental parameters may be spatially expressed. In the preceding example, if we were to take the settlement pattern as our problem and attempt to ascertain why people were located as they were, we would undoubtedly be led to the physical setting as well as to transportation and cultural patterns in our search for a rationale. Thus, the spatial definition is, in this instance, a more inclusive one permitting the consideration of other factors simply because of their relevance to settlement, without bias for or against physical patterns. It does not beg the question, however, as does the man-land view by *requiring* that we look to the physical environment for a better understanding of a given pattern regardless of its relevance to that pattern. Of course, the term "environment" may also be used in a broadly inclusive sense to include man-made environment, psychological environment and distances. Here the definition says too much. All of the social sciences and engineering study man-environment systems in this sense and the definition gives little clue as to how the disciplines will vary in their study of the system unless one adds that geographers view the man-environment system from a spatial point of view. This is similar to the definitional stand taken in *The Science of Geography*: "The Committee believes that geography, *the study of spatial distributions and space relations* (underlining added) on the earth's surface, contributes to treatment of one of the great problems of scholarship. This is a full understanding of the vast, overriding system on the earth's surface comprised by man and the natural environment".[17]

The area study or synthesis approach is another which seems to be closely related to the spatial view. Certainly geographers synthesize as they study regions, but it is arrogant to say that they study *everything* about a particular region. Do we spend much time on the psychology of the individual in that region? Or the insect life to be found within a decaying tree? A lifetime could conceivably be spent studying one square foot of ground if conscientious effort were made to record everything. Obviously the geographer selects in this case also. He includes in his synthesis those things which have spatial expression and which are interrelated. In the above

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17. National Academy of Sciences-National Research Council, *The Science of Geography* (Report of the Ad Hoc Committee on Geography, Earth Sciences Division, Publication 1277; Washington, D. C.: National Academy of Sciences-National Research Council, 1965), p. 8.

example, transport, settlement and selected physical patterns would become part of the synthesis together with other related patterns, and the resultant study might not be appreciably different from that undertaken as a spatial analysis of population.

Thus, the spatial view includes much of the man-land relationship work as well as explicitly geographic syntheses. It leads to an emphasis on map analysis, on the study of landscapes (spatial patterns as observed in the field), to a concern with reasons for the location of all forms of activity and even to the study of spatial systems in the abstract as an aid to the eventual study of actual patterns. An introductory course stressing theories as to why things are where they are, therefore reflects a long disciplinary history of studying the spatial pattern formed by various phenomena or behavior. These patterns include man-land relations as well as areal syntheses of many interacting spatial processes. This interpretation of the spatial tradition, therefore, imputes a greater underlying unity to the field than Pattison's four-part division would seem to indicate. There are, of course, certain aspects of both the man-land and area-study views which are not subsumed in the spatial view but there is still a considerable amount of communality among the three

Some Final Comments

Greater stress on theory obviously does not mean exclusively theoretical exposition accompanied by no empirical treatment. As a discipline, we are in transition from an almost exclusively empirical concern to a mix of theoretical and empirical concerns. At the moment there seems to be little cause for alarm at the prospect of an overemphasis on theory threatening to wipe out the use of empirical evidence in introductory college geography. Most of the social sciences currently allocate a considerably larger percentage of introductory course material to theory than do the geographers. The composition of the mix of theory and empirical material will, of course, vary much from time to time. At present, our problem is further complicated by the severe factual geographic illiteracy of the college underclassman. He typically has little locational knowledge and even less awareness of the basic world distributions. The N.D.E.A. Institutes for elementary school teachers may have enough impact on grammar school geography to remedy some of this. As grammar school teachers learn more about broad descriptive world patterns it is to be hoped that they will abandon some of their present overly detailed country inventories. Careful treatment of patterns on continental scales together with the liberal use of maps and visual aids could provide grammar school students with a solid and more enduring foundation of basic geographic knowledge. There is no reason, for example, why an eighth grader could not pass a simplified version of the thumb test. Developments such as the High School Geography Project would serve to reinforce some of these foundations and to begin to erect a superstructure of ideas and spatial analysis which could be further developed at the college level. We must live in the short run, however, so, in the meantime, we probably will be forced to spend more time on exemplification with basic world patterns than we might wish. Those patterns which are treated, however, can be put in a meaningful context and if they are treated as exemplifications of theory they are also far more likely to be retained. Also, other college courses such as the introductory world regional geography may well serve to meet the need for world coverage more explicitly. There are and will continue to be many introductory courses designed to provide world coverage from different points of view. At present, however, there is an imbalance in that there are too many of the coverage courses and too few courses explicitly organized around a selected set of ideas.

As economic geography courses evolve, therefore, a progressively greater concern for theory would facilitate critical thinking about why things are where they are and permit students to observe the interplay between theory and selected spatial distributions. Such a concern would make it easier for the new insights developing at the research frontiers of the field to be quickly transmitted to the student through the introductory course. Current geographic research should provide a continuing source of empirical studies exemplifying and modifying whatever set of theories is selected for the introductory course. These exemplifications may meet the geographer's interest in "localism" or "globalism" simply according to the scale of each. The studies may meet tests of relevance to society insofar as geographic study has addressed itself to the study of relevant problems. The introductory course could therefore be an effective vehicle for presenting to society some of the geographer's theoretical findings and perspectives with examples of real-world applications rather than a course designed to fill elementary and secondary school gaps or to provide remedial training for teachers.

Finally, it is quite possible that a general introductory geography course could also be organized around a set of essentially spatial ideas which are being found useful by geographers of many persuasions. In addition to some of the above ideas treated in urban, economic and transportation geography, ideas dealing with environmental perception, diffusion of innovation, migration, certain physical models, sample regional syntheses and certain aspects of cartographic analysis could be included in an introductory course consisting of both theoretical exposition and empirical exemplification. In this way some of the underlying unity of viewpoint of the field would be expressed in the context of the remarkable diversity of subject matter and of problems treated.

THE IOWA APPROACH, OR REVISIONSTS AT WORK[1]

Clyde F. Kohn

During the launching ceremony which marked the establishment of the Department of Geography in The University of Iowa twenty years ago, Professor Harold H. McCarty was charged, as its first chairman, to develop a department that would demonstrate "the kinds of tasks geography can perform better than any other discipline." During the ensuing years, programs of study have been developed for both the undergraduate and graduate students to help them perform these intellectual tasks in a more satisfactory manner. The faculty has now reached a stage in its deliberations when it is possible to advance several conclusions about the program of study now in operation. This report attempts to accomplish this purpose by, first, presenting the characteristics of the one-semester introductory course currently being taught to more than 1500 students during the regular academic year, and secondly by presenting a series of comments on the applicability of the knowledge, intellectual skills, and attitudes developed in this more general course to instructional problems in the substantively oriented courses which complete the department's program of study designed exclusively for the undergraduate student regardless of his field of major interest.

Before beginning this assignment, however, certain statements pertaining to the general nature of geography to which members of the faculty subscribe are in order. These have been set forth, in essence, in Chapter One of A Preface to Economic Geography by McCarthy and Lindberg, pages 3-12. Like Hartshorne, and the many geographers throughout the world who subscribe to his overall philosophy of geography, the members of the Iowa staff believe that geography can demand serious attention only "if the discipline strives to provide complete accurate and organized knowledge to satisfy man's curiosity about how things differ in the different parts of the world, just as history in similar fashion strives to satisfy man's curiosity about what things were like in the past; and just as history considers the past in terms of periods because men live and things happen together only within a limited space of time, so geography must consider the world in terms of limited areas within which things are closely associated" (see page 307 of The Nature of Geography). But, as McCarthy and Lindberg point out, "The careful observer's initial impression of the arrangement of the myriad physical and human phenomena that occupy a locality or a region seems invariably to be dominated by the baffling complexity of that arrangement. Achieving a satisfactory understanding of such an arrangement requires the services of a carefully developed methodology." In the study of geography, the Iowa faculty believes that the most appropriate methodology involves the identification and selection of individual elements of a complex situation, and then an explanation of their presence (in terms of their magnitudes or intensities) in the area occupied by such a complex. It should be noted that this belief in no manner rules out the study of the complex situation, that is regional geography, nor does it rule out the study of individual elements in any part of the world. It merely questions whether at this stage in the development of the discipline intellectually satisfying studies of the complex situation can be made without first developing more powerful generalizations in physical, economic, political, or social geography.

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[1] Although the author assumes full responsibility for any specific statement included in this paper, its contents are based on the deliberations of his colleagues in the Department of Geography, University of Iowa, and especially on the work of Professor Kennard Rumage who teaches the general introductory course described herein, and his graduate assistant, Mr. Leslie Cummings.

Introducing Geography as the Study of Location Theory

Believing that an introductory course in geography should present an "appropriate" image of the entire discipline, the geography faculty in The University of Iowa early ruled out those substantive kinds of courses which present only one aspect of the total study. In introductory courses of this kind, students are generally asked to concentrate on one or the other of the several phenomena which exist together on the earth's surface. In many instances, physical phenomena are selected, and the course is one in physical geography. In other instances, the attention of the student is focussed on selected human phenomena, and the course becomes one in economic, political, or social geography; or it may become a combination of these three elements under the general title of "human geography," often giving little or no attention to the nature and distribution of physical phenomena. As a result, the student's first, and often only encounter with geography at the collegiate level, is limited to selected subfields of the entire discipline.

The predecessor to the current introductory course in The University of Iowa was a modified world regional geography course. After due consideration, it was decided to abandon this type of course for reasons referred to earlier in this paper. The faculty believes that such courses need to be given after the student has been introduced to a broad range of topically-oriented courses, and not before. When offered at the introductory level, such courses tend too often to degenerate into little more than inventories of the physical, biotic, and human content of individual countries or groupings of countries, and provide very little that is intellectually satisfying. They are apt to concentrate on the current state of affairs, and for the student who has taken them, soon become outdated.

Thus, instead of offering the more common systematic or regional type of course, it was decided to introduce students to geography in quite a different manner. In the current course, attention is focussed, therefore, not on learning specific facts about the distribution of any particular type of phenomena, nor on studying the complex associations of natural and cultural phenomena as they appear in various segments of the earth's surface. Rather, the emphasis is on the identification of spatial concepts and principles that have been developed in geography as a whole, that is, on the nature of location theory. Attention is given to the methodology of the discipline, and to the kinds of problems with which the geographer is concerned.

This course of action was decided upon because, as in other sciences, the problems of geography are non-repetitive. New problems appear constantly in the realm of both physical and cultural phenomena, and their rate of occurrence is particularly rapid in the latter area. The mental equipment of the student must, therefore, make it possible for him to deal effectively with new situations, situations which do not duplicate those that have appeared at other times and places and which must be considered as new problems. Viewed in this manner, the study of geography can be thought of as the continual broadening and deepening of one's understanding of the location of phenomena in terms of fundamental generalizations which have wide and powerful applicability to new situations.

Problems Related to the Development of the New Image

The department's attempt to gear the content of its introductory course to the teaching of basic and general ideas has given rise to a host of problems, many of which can be solved satisfactorily only with the aid of considerably more thought and research. Three of these are worth noting at this time.

The first and most obvious of these problems is, "What fundamental spatial concepts and principles should be developed in an introductory course because of their wide and powerful applicability to new situations?" For example, to what extent should the course emphasize such aspects of pattern as location, spread, density, and geometry? Or should beginning students consider linkages and flows between places, using such ideas as accessibility connectivity, dominance, and hierarchy? Or, again, should studies of change through time involving such ideas as comparative statics, process and equilibrium be introduced?

The second, and just as obvious problem is, "What facts of geography should be utilized in the development of the fundamental concepts selected for the course?" It is important to bear in mind that generalizations, principles, models, and theories cannot be developed and understood by the beginning student without reference to a body of specific facts. The problem is not whether facts should be used, but what facts might be best introduced into the course so that the pervading and powerful ideas and attitudes to be developed are given center stage rather than the facts themselves.

Finally, "How can students be taught how and when to apply the fundamental concepts developed in the course to new situations?" The solution of this problem involves not only helping students grasp general principles, but also guiding them in the development of acceptable attitudes towards learning and inquiry, towards hypothesizing, and towards the possibility of analyzing events on their own. Students need help in developing intellectual skills and abilities in order to make what they learn usable and meaningful in the future.

What solutions to each of these three problems have been found acceptable by those responsible for designing the introductory course in the University of Iowa? A close examination of the present general introductory course will provide a partial answer to this question.

Fundamental Concepts Developed in the Iowa Approach

There appears to be general agreement that the basic generalizations, principles, models, and theories that form the body of knowledge of modern geography can be introduced in terms of four major organizing concepts: the concept of relative location, the concept of distribution, the concept of areal differentiation, and the concept of spatial interaction. Certain fundamental generalizations having wide and powerful applicability have been, or are being, developed in terms of each of these abstractions.

The concept of relative location is not by any means foreign to geographers. Hartshorne in The Nature of Geography states (page 459) "It is interesting to note that the followers of the doctrine of relationships, however misleading that may be in many ways, have had a clear understanding of the importance of relative location for the proper understanding of the features of any area," and, again, on page 460, "Possibly we must recognize the factor (i.e., relative location), as a geometric factor belonging neither to the natural nor the cultural features of an area, but ever essential for a geographic interpretation of any of them individually, as well as of their combinations that form the total complex of a region."

Perhaps the best qualitative treatment of relative location as an organizing concept is still to be found in White and Renner's textbook, *Geography, An Introduction to Human Ecology*, page 19. These authors discuss relative location as the situation of a place with reference to other places. Such situations, they claim, fall into some four types of classes: central, adjacent, peripheral, and strategic. They consider relative location not as a fixed quality but as a relationship which fluctuates in accordance with the ecological centers of gravity at a given time. More sophisticated ideas include those of centrality and dispersion, and the concept of nearest neighbor. Other ideas that may be introduced are those of time-distance and functional-complementary. Beginning students are asked to think through problems involving these concepts of relative location.

A second major organizing concept in modern geography is that of the *density* surface, a concept useful in studying the distribution of both physical and cultural phenomena. In physical geography, the concept of surface is generally introduced when studying the elevation and slope of landforms, or the highs and lows of atmospheric pressure patterns. The student readily becomes accustomed to viewing the distribution of these phenomena in terms of a continuous surface with three dimensions. On the other hand, human phenomena including the distribution of population, settlement forms, and land uses have more often been presented as a series of discrete clusters of different sizes. But, like height contours on a topographic map, the distribution of human phenomena can be regarded as being continuous and capable of producing three-dimensional models in much the same way as terrain models. In this more abstract form, it is possible to weld together a number of apparently different phenomena and different concepts, as for example, population density lapse-rates around towns, the von Thunen model of ring formation, cost surfaces, labor sheds, market areas, income fronts, and political fragmentation with distances from capital cities, to name but a few.

It is also at this time that the concept of *region* may be introduced, a concept which has long occupied a central position in geography. The notion of regions as a taxonomic problem, that is, as areal aspects of a classification problem, might be introduced and quantitative methods for their delimitation may be developed. To what extent the assignment of particular areas to regions, and the matter of regional generalization and scale can be explored with beginning students remains to be decided.

The third major organizing concept, that of *areal differentiation*, offers a large number of concepts which constitute a fundamental part of the geographer's point of view and therefore underlie all the various branches of the discipline. Amongst those which might be stressed in the introductory course (1) variations in resources due to natural factors including climate and landforms, or to cultural factors such as man's perception of the value of a resource at a particular time in his cultural development, and (2) variations in man's use of available, or accessible, resources to satisfy his basic needs and wants.

The fourth major organizing concept is that of *spatial interaction*, including the movement of both goods and people. Concepts introduced in terms of the movements of goods include those of specialization, accessibility, and demand. In the treatment of the movement of people, students might develop such ideas as population pressure, and the ideas associated with the several types of migratory forces that have been identified in the literature of geography. This section of the course permits students to consider elementary interaction models, field and territory concepts, diffusion models, and networks in terms of the location of routes, density pattern of route networks, models of network change, and the flow of goods, or traffic, over these networks. The organizing concept of spatial interaction also permits the instructor to return to ideas introduced earlier in the course, especially to those dealing with surfaces, for it is now that ideas such as the functional hierarchies of settlements take on a deeper meaning. Special emphasis can now be given to the concept of central-place hierarchies and the distortions due to agglomerations and resource localization, thus providing for a suitable recapitulation of the entire structure of geographic knowledge and methodology.

The Development of Intellectual Abilities and Skills

Any introductory course designed to develop the concepts set forth in this report must, as a matter of course, be more scientific than artistic in its approach, more quantitative than qualitative, more directed to the development of principles and generalizations than to the description of specific occurrences, more analytical than descriptive. Certain intellectual skills and abilities must be developed, therefore, if the concepts are to be properly grasped and used. Thus, in the introductory course in The University of Iowa, stress is placed on the development of those analytical skills necessary for examining objectively the locations of selected types of phenomena within specific areas, and in the development of location theory.

Geographic problems commonly revolve around the following questions, "Why are these things here?"and "How may we account for the presence of this observed magnitude, or intensity of this particular type of phenomenon, in the area with which we are presently concerned?" In trying to find acceptable solutions to such problems, procedures common to science seem suitable to the needs of geography. Consequently, the course in general introductory geography in The University of Iowa, referred to in the title of this paper as The Iowa Approach, attempts to help students learn (1) to state problems in ways in which they can be analyzed, (2) to build suitable hypotheses, and (3) to test these hypotheses by simple quantitative methods or by means of analogues. Experience indicates that the basic features of the first and last of these stages can be mastered rather readily by undergraduate students. Thus, in the Iowa Approach the emphasis is placed on (1) the acquisition and use of data to describe problem situations, (2) the use of appropriate cartographic or mathematical-statistical techniques to facilitate comprehension of these problems, and (3) the selection and use of suitable systems of measurement for testing the validity of such hypotheses as may be employed. The usefulness and limitations of these devices, which fall generally in the field of statistics, seem to be readily grasped by the undergraduate student once he has learned of their applicability to the kinds of problems with which he is confronted. The intermediate stage of the scientific method, on the other hand, that is, the building of useful hypotheses gives students at the beginning level much more difficulty. For this reason, the faculty has come to believe that the formulation of suitable hypotheses should constitute the core of professional training in the discipline, and is therefore taught more rigorously at the advanced levels of instruction.

Other Introductory Courses in the Department's Program of Study

The range of explanatory material that must appear in a body of geographic theory is so great that a division of labor, that is, an opportunity for specialization within the discipline, is indicated. Preservation of unity in Geography demands, however, that the number of such subdivisions be kept at a minimum, but the need for specialization is nonetheless real. Thus, in the Iowa Approach, it has been found practicable to conduct a general college-level program in five major divisions—physical, economic, political, social, and urban geography, with a very considerable provision for offering courses devoted to narrower aspects of these divisions, and for regional courses which provide for the application and testing of various geographic hypotheses in different parts of the world. The number and character of these more specialized and applied courses has varied with the demand for them and the staffing facilities that are available. The faculty believes, however, that the basic structure of the undergraduate program should consist of general systematic courses, devoted primarily to matters of hypothesis formation and the development of an understanding of existing body of theory in each of the major divisions.

The introductory course in physical geography which has been designed exclusively for undergraduate students is entitled, The Geography of Natural Resources, and regards physical phenomena in terms of their value to man. The introductory course in economic geography focusses attention on the class or group of human activities involved in the production and consumption of goods and services. In the introductory courses in political and social geography, attention is concentrated primarily on the use of cartographic and elementary descriptive statistical techniques to facilitate the student's comprehension of the problems which are selected to make up the course content. For example, in the introductory course in Social Geography, the uneven distribution of population is presented by means of a series of density maps, and the notion of a continuous population density surface is introduced. Attention is given to measures of concentration using variously mathematically derived concentration ratios. Another section of the course deals with the migration of people and permits an elaboration of elementary interaction models involving places of origin, intervening obstacles, and places of destination. The introductory course in urban geography permits the instructor to concentrate on the further development of concepts such as those of central place, urban structure, and urban networks.

In this manner, the concepts which are first introduced in the general introductory course, such as those related to relative location, surfaces, areal differentiation, and spatial interaction, can be further developed and used in the department's more substantive introductory courses in physical, economic, political, social, and urban geography, all of which are open to undergraduate students but not recommended for entering freshmen. The latter are advised, first, to complete successfully the more general introduction to geography course described in this paper.

CAN CULTURAL GEOGRAPHY BE TAUGHT?

H. Homer Aschmann

As a takeoff point for discussion, let us define cultural geography as that branch of learning that is concerned with the diversity of landscapes over the earth which is not accounted for by physical differentiation, and the parallel and interacting diversity of human behavioral patterns from place to place. It seeks to describe these landscapes and behavioral patterns as they are, hopefully in comprehensible categories but in any event accurately. Cultural geography further is concerned to explain why these diversities exist both in terms of their historical development and by any principles of biological and social science that can be demonstrated to have explanatory power.

If this definition is accepted it will be seen that there is an antithesis of goals between cultural geography and the behavioral sciences. In their modern development the latter are strictly nomothetic and, if possible, experimental. Their goal is to find law-like explanations for all human behavior that apply universally. Should they be fully successful, presumably their findings will be put to use and all of mankind organized into rational, homogenized behavior. Regionally deviant behavior patterns will be erased by compulsion or advertising, and the presently diverse landscapes, the products of earlier history, will have only antiquarian interest. Antiquarians may find no place at all in a really rational world.

Fortunately, from my standpoint, I do not look for the full success of the behavioral sciences within the immediate future. In the meantime, the cultural geographer is perfectly capable of cooperating with the behavioral scientists in both directions. As their understanding of the determinants of human behavior, both on the individual psychologic and social group level, increases, and this understanding can explain the diversity of the world better, the geographer must acquire the knowledge and make use of it. An example may be helpful. The Ricardan theory of rent may have its imperfections, but it forms a tremendously useful and essential tool for the geographer in explaining land use zoning around cities whether they be in East Asia or the American Midwest. Conversely, the cultural geographer can afford tests for many of the behavioral scientist's universalist propositions or hypotheses about human behavior. Are certain behavior patterns characteristic of all mankind under definable conditions, or are they only present in cultures with a particular historic background? Some standoffishness on both sides has limited exploitation of this opportunity, resulting in a reduction in credibility for the behavioral sciences and an undesirable isolation of geography from the scientific frontiers.

Intrinsic interest, Sauer's naively given curiosity if you like, and the potential contribution, even if only in a negative sense, to nomothetic science would seem to justify the continued cultivation of cultural geography as a scholarly discipline. Both these justifications are adequate to sustain the subject in the college curriculum, and I would believe make it an extremely valuable if not essential part of the general education of any college student. This pronouncement meets some resistance from other entrenched disciplines, but that is normal academic competition. What is troublesome is that cultural geography is terribly hard to teach in a coherent, interesting, and intellectually challenging manner. Admitting from the start that I have no definitive solution, this paper will examine some problems in and approaches to teaching an introductory course in cultural geography.

Conceptual Problems in Teaching Cultural Geography

The greatest problem in developing a coherent and structured course is that of particularity. Each culture is a unique phenomenon developed out of its own historic background in its own environment, and the landscape it has produced is similarly unique. Responsibility to accuracy then demands that each landscape be described just as it is. Comparative comments and notations of parallels in other parts of the world can and must be added, but always with the recognition of the peculiarities of each region. It is difficult indeed to systematize such information, and the data of cultural geography may appear to the student as just one thing after another. Some may be exotic and interesting, but they are hard to learn and easy to forget.

If the instructor seeks to approach the differentiation of cultural landscapes from a genetic standpoint the problem becomes even greater in two ways. He tends to be overwhelmed by the mass of historical data which he must command and make available to the students, and they are even more shocked at how much there is to learn. Further, the perceptive and conscientious instructor shortly discovers that critical parts of the historical information on how certain cultural landscapes evolved are simply unavailable or require original research on his part. A necessary qualification develops immediately: attempts in an introductory course at genetic explanations of cultural landscapes must be restricted to a relatively small number of examples. The qualifications noted above concerning the genetic approach do not necessarily make for a negative impact in the teaching situation. A learned instructor can honestly rather than histrionically evoke excitement in students by pointing up the gaps, many of them perfectly fillable by research, in the available knowledge. An example of such a gap may be cited. Why do the numerous holders of Irish names in the Carolina Piedmont and elsewhere in the Upland South prove to be fundamentalist Baptists?

While the theory of the social sciences at present proves to be far less effective in explaining the cultural landscape and regionally variant behavior patterns than many of its protagonists would claim, theories and conceptualizations from several of the social sciences can provide some valuable structure to a cultural geography course. Since the students are likely to be freshmen or sophomores it cannot be assumed that they will be familiar with such theories and concepts, and the geography instructor has the responsibility to make them so. The net reproductive rate in demography, the theory of rent and interest in economics, the concept of culture in anthropology, and functional versus evolutionary models for societies are the sorts of ideas referred to, and the geographer must be prepared to give a clear and accurate exposition of those he feels are relevant. The question of overlap with or poaching on other of the social sciences will, of course, arise, but there has been far too much retractive concern for what is exclusively geographical. All of the social sciences borrow from each other, with or without permission, and I would interpret this borrowing as a symptom of vitality, not of impoverishment. The recent flurry of ecological studies by anthropologists is better to the extent that they use the geographer's methods and data. We do have the responsibility to present these borrowed concepts and data with scrupulous accuracy and fairness. The independence of the geographic discipline will be sustained not by its isolated exclusiveness but by how well it performs its task of explaining the landscape. As it is successful it will be drawn into ever more intimate association with other disciplines.

Some Approaches to the Cultural Geography Course

1. The encyclopedic approach to cultural geography has not disappeared. It involves exposing the student to a maximum number of facts about a maximum number of places. An examination of the currently available texts both in general geography and in economic geography will show some which seem to have no other rationale. The disadvantages of the approach in the area of sustaining student interest are obvious enough that they need not be belabored. A few points in its defense may be more appropriate. It is methodologically impeccable as dealing in facts as they are known. The student is given raw data without their being crammed into a theoretical mold that may be completely fallacious. With a courseful of such information he is in a better position to examine critically on his own the social theories that are likely to be presented to him at a later stage in his academic career. The cultural geographer is also likely to need a very considerable store of such information, and to be self-selected as one who doesn't mind acquiring it. Nonetheless, we are dealing with a generation of college students who have been propagandized against the merit in absorbing raw facts. They seek the significant generalization. It will be an unusually gifted instructor who can sustain the respect and interest of bright students with the encyclopedic approach.

2. A classic example of the sweeping generalization that seemed to put order into the heterogeneity of the available information on human geography is "environmental determinism". As a dead horse that needs no further beatings from the present generation of geographers the theory can be treated briefly. For American geographers, the coup de grace was probably given by Sauer in 1925[1] though the argument raged for more than a decade longer. I would only point out that other serious social scientists, for example – Betty Meggers,[2] are rediscovering environmental determinism as a useful tool in explaining phenomena in the archeologic and prehistoric record. It is my own opinion that "possibilism" is pure mush with no explanatory power at all. It is an ineffectual disguise for the encyclopedic approach.

For the beginning student, and in its heyday even for doctoral candidates, environmental determinism had degenerated into a catechism. The right answers were always found: the problem was that too many of them just didn't happen to be true.

On the other hand as a model to explain diverse cultural developments environmental determinism may well have its best years in front of it. But this will involve true research, checking the hypothesis against precise physical understanding and a maximum knowledge of the historic record. I can only agree that the beginning student is likely to be misled when, by necessity, he can only be given limited physical understanding and selected historical information and is asked to test or apply so complex a theory.

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[1] Carl O. Sauer, "The Morphology of Landscape," *University of California Publications in Geography*, Vol. 2, No. 2 (1925), pp. 19-54. See especially pp. 51-52.

[2] Betty J. Meggers, "Environmental Limitation on the Development of Culture," *American Anthropologist*, Vol. 56 (1954), pp. 801-824, is her initial formal statement of position. She continues to pursue the idea in essays and as a theme around which to organize archeological monographs. The classical position in American anthropology, espoused especially by Franz Boas, his student Alfred L. Kroeber, and their students, had been to regard environmental influences on culture as relatively minor. Following Meggers' pronouncement, the question has again become a vital one. *Cf.* Edwin J. Ferdon, Jr., "Agricultural Potential and the Development of Cultures," *Southwestern Journal of Anthropology*, Vol. 15 (Spring, 1959), pp. 1-19.

3. A more recent development, and one that may prove popular and even successful, is exemplified by P. E. James' recent book, One World Divided.[3] It involves what might be termed the encapsulating epigram. Taking a very general theme in human history, in this case the origin and spread of the industrial and democratic revolutions, James endeavors to characterize the modern reactions of each country in the world to the so-called revolutions, noting briefly how their physical, historical, and economic background relate to their reactions. Economy in wordage and selectivity are the watchwords; in a quite short book he manages to get around the world, sometimes giving a page or less to a major country. James is widely learned and perceptive: the student will not be bored, and even the well-informed one will find interesting insights. The cultural geographer may feel uneasy, however, at the simplification of an extremely complex reality. We can even assume that the selection is perfect and for each country, the most important thing is said. Will the student not be misadvised to think that making such selective judgments constitutes the goal of geographic research?

4. A quite different approach to cultural geography may be best represented by Philip Wagner's Human Use of the Earth,[4] a book that is not organized for use as an introductory text. Although the traditional topics of cultural geography appear they are treated as background. The author's model for the modern world is an economic one with a strong salute to technology. It has high compatibility with the concerns of the regional scientist and transportation analyst. These students see the historic diversities of land use and living patterns giving way before ever more rational means of assembling materials for the production of goods and distributing them as widely and equitably as possible. Through his study of land use practices throughout the world the geographer may well encounter empirically derived schemes that are so effective that they merit borrowing or publicization, but the major goal is development. How can "backward" lands most effectively rationalize their economic activities to achieve greater productivity and higher living standards for their residents? How can cultural barriers to such progress be overcome?

From the first it must be acknowledged that this applied approach has power on its side. Not only does it conform to the political temper of our times as something working toward a "better" world, it describes with discomforting accuracy what has been going on for the last century and a half. Eduard Hahn in 1900 in his Wirtschaft der Welt am Ausgang des neunzehnten Jahrhunderts could point out that the upshot of a century of European colonialism was to move the world's economy a long step in the direction that modern international agencies are following, namely toward a unified, and rational, and more productive, and less varied economy. At least some cultural geographers are troubled. They see loss of traditional skills and social relationships as being less than fully compensated. They are less than certain that the economic model comprehends mankind's aspirations.

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[3] P. E. James, *One World Divided* (New York: Blaisdell, 1964).

[4] Philip Wagner, *Human Use of the Earth* (New York: Free Press of Glencoe, 1960).

Seidenberg's Posthistoric Man[5] is even less attractive than 1984. Some reactionaries like me even feel noble in exposing students to the notion that there is esthetic merit in a culturally diverse and less than perfectly efficient world.

An Eclectic Plan For an Introduction to Cultural Geography

Though standing in disrepute among many philosophers the notion of eclecticism has a distinct appeal to the sort of person who chooses to pursue cultural geography as a central scholarly interest. He is charmed by a diversity of ideas, be it the foot plough of the Andean Indian versus the combine of the Kansas wheat farmer as agricultural tools or Melanesian reciprocity in gifts, Navaho chants, or the free market as means of distributing a society's goods among its members.

An ideographic recounting of all the cultural phenomena of the world's people, even if it were feasible, would not be satisfying without attempting to organize at least sections of them into comprehensible models. The cultural geographer's difference with the nomothetically oriented social scientist arises from his refusal to be disinterested in those phenomena which do not fit into any available model. His course may never follow a straight path from premise to conclusion. Perhaps it enriches rather than clarifies.

It may be reasonable to hope that students will enter such a course with at least the fundamentals of geographic knowledge and skills, be they obtained in improving high school courses or from an introductory course in physical geography. The ability to read with precision all sorts of maps, an appreciation of the formal power of astronomical geography, and some knowledge of the character, causes, and distribution of the world's diverse climates will be necessary if there is to be any hope of realizing an appreciable portion of the goals of the course.

Starting off with a short series of regional studies has the virtue of immediately introducing the student to the wholeness of the cultural landscape. Perhaps only two examples can be afforded, but they should be quite distinctive. One might be chosen from within our own culture area (the United States). It should be small, a small or middle-sized town, a rural county, or an oasis community in the western part of the country. The latter possibility is especially attractive because of its easily defined boundaries. If it cannot be actually visited by the class the instructor should have intimate familiarity, based on visits, and have photographs which will point up the visible aspects of the cultural landscape. Coverage should be thorough, including the physical landscape, the visible cultural landscape, economic organization with notes on, but not major emphasis on, relations beyond the community in question, and some consideration of cultural features that give the place distinctiveness even though their impact on the visible landscape is minor, such as religious attitudes, educational aspirations, blue laws, etc. Even with a substantial literature available for student use, and although no effort is made to present a full historical background, it is hard to see such a type study being accomplished in less than a week.

Many of the just noted characteristics should apply to the second and possibly third, contrasting micro-regional study. Except that it be in a different cultural realm[6] and involve a small area, perhaps the most important criterion for selection should be that it involve a place the instructor knows well, preferably on the basis of field work. A relatively primitive, and hence socially and economically isolated society, has advantages for such study as does an island.

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[5] Roderick Seidenberg, *Posthistoric Man* (Chapel Hill: University of North Carolina Press, 1950).

Following this introduction the focus can change sharply, and for about half the course the student can be introduced to themes in the social sciences that make or can make significant contributions to the understanding of the cultural landscape. The following list is deliberately diverse; not everyone would wish to consider all these topics, and a considerable number of others might be substituted; ordering is similarly up to the instructor.

1. The concept of culture, as elaborated by modern anthropologists, is not automatically a part of the college student's intellectual equipment. It is of great importance to emphasize how much of what we do, the things we make and use, and the goals toward which we direct our lives' activities are fully determined by the culture in which we are embedded, not by either human nature or the immediate physical environment. There is no strain in finding literature rich in exotic and striking examples that will excite the student's imagination and probably permanently affect his thinking. Two cautions are indicated. The alien and exotic culture must be presented as a coherent and functioning whole, at least well enough integrated to survive and to sustain the individuals and the society that bear it.[7] Further, the historic continuity of each of the world's cultures must be stressed. Human societies just do not exist without culture and as a corollary no culture can spring into existence *de novo*. Some more subtle questions arise which may or may not be worthy of consideration. For example, is the functional or equilibrating, hence essentially static, model of culture the appropriate one, or should stress be laid on the evolving and changing aspect?[8]

2. The formalities of the discipline of demography are similarly unknown to the lay public and essential to an understanding of cultural geography. Both descriptive material on the world's population geography and the empirical generalizations of the demographic discipline are pertinent. Malthus' statement that populations increase (or decrease) geometrically is true but not self-evident. In fact, until very recently our leaders and news media either didn't understand it or chose to ignore it. The precision of the net reproductive rate as developed by Kuczynski[9] as the means of describing the growth status of a population is both intellectually exhilarating and useful.

3. A number of major themes in culture history that involve most of mankind and most of human time may be pursued. Such surveys may bring into focus aspects of the cultural landscape and they also serve to point up

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[6] Dividing the world into a modest number of major cultural regions, realms, or worlds has become a fairly popular organizing principle for authors of textbooks in regional geography. Examples are Richard Joel Russell and Fred B. Kniffen, *Culture Worlds* (New York: Macmillan, 1951), and Preston E. James, *One World Divided*, op. cit. Though differing considerably in detail such broad regional breakdowns show such basic similarity as to indicate that geographers find themselves in agreement as to the existence of and general outlines of such realms.

[7] The abundant writings of Bronislaw Malinowski make this essential integration especially vivid.

[8] A recent stimulating examination of the question appears in Walter Goldschmidt, *Comparative Functionalism* (Berkeley and Los Angeles: University of California Press, 1966).

[9] Robert R. Kuczynski, *The Balance of Births and Deaths*, Vol. I (New York: Macmillan, 1928).

the historical continuity of cultures along with the multiplexity of their manifestations. A few examples may be noted:

a. The theme of the domestication of plants and animals leading up to the development of true agriculture affords an opportunity to identify distinctive systems that often characterize whole cultures. Hahn's notions,[10] perhaps as refined by Sauer in his *Agricultural Origins and Dispersals*,[11] are belatedly receiving general scholarly acceptance.[12] They note the primacy of horticulture and the house animals like the dog and pig, the secondary domestication of herd animals, cow, sheep, and goat, for religious rather than economic purposes, and finally the use of the plow and the integration of the herd animals with vegetable production into a system of true agriculture with crop rotation and manuring. Pastoralism appears as a tertiary derivative of agriculture. The different paths followed by the inhabitants of the various major regions: East Asia, the Middle East and Europe, West Africa, and the pre-Columbian New World stand out nicely.

b. Man's growing mastery of energy sources from his own back, to direct use of wind and water power and draft animals, to power from steam or combustion, to putting energy from any source into the electrical form is a similarly sweeping theme. As a parallel to the development of agriculture it is nicely supplementary in that many of the most important developments have occurred in the last centuries and even decades rather than some millenia ago. Differential exposure to the energy revolution accounts for much of the character of various parts of the world today.

c. The growing size and complexity of socio-political organizations from band to tribe and village to state and city may also be followed. Implications concerning land tenure, conservative or exploitive attitudes toward soil and other resources, and possibilities of economic specialization and rationalization are abundant and significant.[13]

4. The ecological model of organisms including man existing in a state of mutual dependence on each other and on their physical environment in dynamic equilibrium would seem to be too ideal to be true, at least in the short or middle term. It does have great conceptual utility and serves to counter-balance the careless emphasis on progress and development that faces all citizens from governments and the advertising media. In the long run, this model may be the only one that will permit man to survive.[14] It

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[10] Eduard Hahn, *Die Haustiere und ihre Beziehungen zum Menschen* (Leipzig, 1896); *Idem*, *Die Entstehung der Pflugkultur* (Heidelberg, 1909); *Idem*, *Von der Hacke zum Pflug* (Leipzig, 1914).

[11] Carl O. Sauer, *Agricultural Origins and Dispersals* (New York: American Geographical Society, 1952).

[12] *Cf.* Erich Isaac, "On the Domestication of Cattle," *Science*, Vol. 137 (July 20, 1962), pp. 195-204.

[13] National Academy of Sciences–National Research Council, *The Science of Geography* (Report of the Ad Hoc Committee on Geography, Earth Sciences Division, Publication 1227; Washington, D. C.: National Academy of Sciences–National Research Council, 1965), has some especially seminal ideas on these implications in its section on Political Geography, pp. 31-44, although the orientation is toward action on immediate problems rather than reflective study.

[14] An incisive, thorough, and remarkably non-polemic ecological study of a restricted area is F. Fraser Darling, *West Highland Survey* (New York: Oxford University Press, 1955). Many of the contributions in William L. Thomas, Jr., (ed.), *Man's Role in Changing the Face of the Earth* (Chicago: University of Chicago Press, 1956), elaborate the theme of man's position in the world ecological system.

is of course necessary to note that this is a static model and makes provision for the evolution of neither biological species nor human cultures.

5. The spatial models that ultimately derive from Ricardo and von Thunen do not, in my opinion, constitute the whole of geography but they do have great explanatory power in giving some system to the extraordinarily complex patterns of distribution of economic activity. The cultural geographer only reduces his capacity to comprehend reality if he ignores them regardless of what he thinks of the extremes of some practitioners of the topologic approach.

6. Migrations of peoples and the diffusion of ideas are phenomena that all agree are terribly important in creating the world of today. I must acknowledge a dearth of significant generalizations available concerning these processes, but some recognition of the problem is due the student.

7. A particularly enticing question that may be posed by an instructor who is concerned to stimulate thought even though he cannot provide answers is whether cultures have an intrinsic tendency toward orthogenetic development.

Each of the themes discussed above, and many others that might be suggested, has a singular advantage. The answers are not all in. Sometimes we are lacking geographical and historical data that can be supplied by future research. In other cases, the present theoretical formulations are demonstrably incapable of explaining all the relevant distributional facts. The student can scarcely help but recognize that the study of cultural geography is still going on and that he can participate in it.

Before the course ends, there is reason to return to the regional approach, to cultural landscapes, hopefully with deeper insights. Again, treatment of at least two areas of diverse character is desirable, but two modifications can be made. Larger and more complex units can be treated, and a genetic approach to the development of their cultural landscapes can be employed. With the background in theory of social science and culture history discussed above, the cultural regions can be identified more clearly, and in addition to describing what the cultural landscapes are like something can be said about how and even why they got that way. Such understanding may even permit a reasonable identification of trends and prediction of future developments.

Results and Residual Problems

The learnings or modifications of behavior that may be achieved from a course in cultural geography of the sort described above are of three sorts. First, from the intrinsic interest of the data and being exposed to it in lecture, readings, and study of small and large scale maps there should be a considerable accumulation of descriptive knowledge of the world, particularly of its occupance by man. While we can all agree that rote learning of place name lists is dull and probably pointless since they are soon forgotten, the creation and enrichment of a descriptive framework of such knowledge is one of a geographer's continuing tasks, and the framework proves to be one of his most effective tools.

On a quite different level the student will become acquainted with a number of valuable theoretical formulations in the social sciences, and in a peculiarly geographic sense will see them as subject to test in the real world. The values of such exposure are distinctive. Should the student become a geographer or a social scientist he is less likely to operate on a provincial or ethnocentric level, seeing all problems strictly within the framework of a single culture. He can recognize mankind as being encompassed by a number of functioning and, to some degree, integrated cultures and value systems which interact with each other as well as on their environments but which try to maintain their own integrity. Such an appreciation should be of worth for the citizen as well.

Finally, on a moral or esthetic level, I would like to see more of the next generation's intellectuals aware that the richness of the world consists in large measure of the diversity of culturally devised means of living in it.[15] Holding such a goal and working toward it may be the ultimate justification of devoting one's working life to the teaching profession.

A number of problems remain and should be acknowledged. It is hard to conceive that good courses in cultural geography will resemble each other in detail. The instructor is bound to use as regional examples those regions he knows most intimately. Even some of the theoretical topics treated may vary with the interests of the instructor. Probably he should alter them from time to time to sustain his own interest. The range of material that might be treated is almost infinite. It will probably not be possible to design an objective examination in cultural geography that would serve for all students taking such a course. I would maintain, on the other hand, that exposure to such a course will modify any student's perception of any landscape he examines in the direction of wider sensibility and concern for subtle and meaningful elements. Most planners, for example, would profit from such concern.

A related problem is crowding. Even so eclectic and selective a course as has been outlined will continually threaten to lead the instructor on detours which at the time capture his or the class's interest. These are not to be avoided religiously. A person can teach cultural geography comfortably only if he can disregard the syllabus and not worry that he isn't doing what he did last year.

The text situation is a further complication. Heavy reliance on a single prepared body of data may not encourage the attitude of inquiry that is a primary goal. It is with considerable gratification that it can be reported that Bobbs-Merrill is undertaking a reprint series in geography. This, plus the readers such as Wagner and Mikesell[16] which are currently available, should enable the student to get to the frontiers of inquiry in at least a few instances. Hopefully, at least on one occasion in even the introductory course he can be induced to go to primary sources.

The final problem can only be alluded to in this paper. Its exposition will require another kind of activity. The problem is to convince the student that the data of cultural geography are derived from field observation and are only as valid as those observations. Some sort of field study of features in the cultural landscape is accessible everywhere. Ethnic neighborhoods in large cities, contrasts between types of agriculture at varying distances from markets or transportation facilities, surviving relict patterns of land use, etc., are phenomena some of which are observable reasonably close to any school. Correlations between the society's dominant goals in land use, the way a farmer locates his house and farm buildings, and how he views his own goals in farming are there to see or be identified by ethnographic interviews rather than questionnaires.

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[15] An effective plea for another sort of diversity that should afford support for the viewpoint presented here is John R. Platt, "Diversity," Science, Vol. 154 (December 2, 1966), pp. 1132-1139.

[16] Philip L. Wagner and Marvin W. Mikesell (eds.), *Readings in Cultural Geography* (Chicago: University of Chicago Press, 1962).

The census summaries by county or even minor civil division show some things but not all. When a student, even as an example, has by field observation found the limitations of modern statistical data he will be better able to utilize and exploit historical materials or descriptions of areas to which he has no access. The substantial effort involved in getting even introductory students into the field, if only on one or two Saturdays, is justified.

THE USE OF CULTURAL CONCEPTS IN GEOGRAPHICAL TEACHING: SOME CONSPIRATORIAL NOTES FOR A QUIET INSURRECTION

Wilbur Zelinsky

I

The text of this sermon is simple and modest: the recognition of human culture, in all its power and variety, as a major geographic variable and determinant has major potential value for us laborers in the undergraduate vineyard. I wish to suggest some of the reasons why so little has been done with this notion previously, some of the practical difficulties that lie ahead, and, most importantly, several specific ways in which the cultural point of view can help in realizing our pedagogic aspirations. I do not propose to dazzle you with any blinding new revelations or blare forth revolutionary manifestos: what is advocated is the quiet, creeping "acculturation" of geographers. The particular frame of mind and bag of tricks suggested here need not denigrate, nullify, or dislodge any of the valuable new theoretical formulations or teaching devices which our profession has been evolving; but they can certainly supplement them usefully. It must also be argued that some of my recommendations need not be limited to courses labelled "Introductory Human Geography," or the like; they are as germane to the advanced course as to the most elementary, and they can be smuggled into the economic, regional, or even physical course as well as the overtly anthropogeographic.

The assumption underlying all that follows needs to be stated quite bluntly at the outset. Like all basic dogma in social science, the "cultural axiom" is so self-evident to its advocates that it hardly needs articulation or defense, but so trivial or irrelevant to the non-believers that the most elaborate explication may have minimal impact. Simply put, it is the contention that cultural process is one of the few great first-causes that shape those place-to-place differences of phenomena on or near the earth's surface that we geographers study, and that this powerful, nearly sovereign primal force should share star billing in our research and pedagogy, along with geomorphological agents, climatic process, biological process, and the operation of economic laws. Despite the fact that veritable mountains of empirical evidence might be adduced to support the cultural axiom, the painful fact is that its acceptance and use are apparent among only a small handful of geographic researchers and even fewer of our instructors.

For the sake of expediency, let us assume that we have reached a common understanding on the definition of the concept of "culture," for otherwise reams of paper could be expended pinning down the essence of this protean and surprisingly refractory notion. In brief, we may regard culture as the totality of that complex system of learned behavioral patterns, assumptions, ideas, and attitudes, along with their associated artifacts and institutions, that is specific for particular communities of human beings and their individual members; or in the most dehydrated didactic shorthand: Culture = learned through-processes and behavior. [The definitions of culture are reviewed and evaluated in Kroeber and Kluckhohn, 1952. Other extended discussions are to be found in Kroeber, 1952 and Kluckhohn, 1949.] There is a second related assumption to be stated, following in the footsteps of Alfred Kroeber and, with some mental reservations, those of Leslie White [White, 1949], namely that culture is to a large extent an autonomous, virtually "super-organic" system that functions and evolves according to its own internal logic and presumed set of laws (laws lamentably that are still mostly unperceived and uncharted by students of cultural phenomena) and does so with a large degree of freedom from individual or community control.

Now, if all this is indeed true, why the reluctance of geographers to acknowledge the cultural facts of life and to teach them? The most obvious, compelling reason is the simple human difficulty of seeing and grasping the culture axiom, i.e., to objectify and study in detached fashion what is so private and integral a part of our existence. In short, it is hard to understand why we should speak dispassionately about our own culture, something that seems so inevitable, "right," and God-given that it seems silly to ask questions about it, or why we should peer at the culture of other groups through anything except the thick colored lenses of our own ethnocentric spectacles. It is quite different with mountains or marshes, with thunderstorms or heat-waves, tropical rain-forests or Arctic tundra, with whales and viruses, or with the price of petroleum or the prevalence of dairy cows. Any fool—or schoolchild—can see that such things exist, that they can be measured, mapped, and explained, and that you must study and interpret them to know what you need to know about the geography of various places. The universes of physical fact, of biological fact, of economic fact smite the senses of the beholder; but the mental universe wherein cultural phenomena reside demands a special passport from its visitor—a degree of intellectual sophistication, a coldblooded abstraction and wrenching oneself free of cherished and comforting presumptions—that is not gained without some considerable effort. Because of its relative invisibility and the inherent obstacles to objective scrutiny and analysis, the realm of culture was discovered late, and insofar as there is a "science of culture," it is still a youthful, inchoate discipline. Its natural habitat is, of course, the field of anthropology; and there has not yet been a great deal of penetration by the culturological point of view into other disciplines. The traditional, rather parochial outlook in such fields as history, economics, sociology, the fine arts, and of course, geography has only gradually been broadening and becoming less consistently a West European (or overseas derivative) view of the subject matter.

For those geographers seeking neat, basic, universal rules to explain the fearful complexities of this earth-shell, the cultural approach may seem a step backwards. The huge buzzing chaos of cultural data does not meekly sort itself into tidy packages. Here is the happy hunting ground of the "splitter" rather than the "lumper"; and the few general "laws" or "principles" that are known to operate are somewhat vague, riddled with exceptions, and generally feeble in explanatory power. Furthermore, there is no assurance that there will be any dramatic breakthroughs toward comprehensive theorems, that the day will dawn when we can retrodict the cultural patterns of the past, fully explain those of the present, or predict those of the future. I have no doubt that progress is to be expected, or that a more orderly arrangement of facts and greater theoretical insights are in the offing. But for a long while indeed the cultural anthropologist and geographer will be in much the same boat as the historian: they will deal with peculiar configurations of traits, events, and regional complexes that tantalize with hints of large repetitive forces, trends, and general covering laws, but derisively refuse to yield them up when the issue is forced. But, like the historian, we cannot afford to ostracize reality until it begins to behave itself. It is comforting to lean upon the general principles of the physical sciences, biology, psychology, and economics that do so much to systemative geographical phenomena. But the inescapable fact remains that different groups of people see and think about their worlds differently, and behave differently because of cultural constraints—for ultimate reasons that still elude our understanding—and that, much as some of us would like to, we cannot reckon with Man as an ecological agent, as an economic being (*Homo economicus* is a mythical convenience like Piltdown Man), a political creature, or even a demographic entity without knowing as much as possible about his cultural heritage and proclivities. For whatever momentary triumphs we may gain in our geographic manipulations by treating Man as a universal, rational constant molded in our own American or European image, we shall pay a stiff price through the forfeit of deeper insights.

Once we overcome this initial hurdle of convincing ourselves and our students that there is a major, more or less independent variable in geographic causation called "Culture" and that its study and exploitation offer some unique advantages, there are still other discouraging problems to combat. Cultural phenomena may not only be difficult to see or recognize, but they are also inherently hostile to easy measurement, comparison, and classification. Of course, we do not have all the raw data on cultural features one might desire; and undoubtedly we shall never be really happy with our factual stockpile. But, quite aside from this chronic annoyance, there is an unfortunate shortage of good, vigorous attempts to systematize what knowledge we do have, even at the elementary level of properly pigeonholing observational data. To take just a few instances that I have had occasion to worry over recently, can anyone tell me of a valid worldwide system for describing and classifying forms of land-tenure? or the various modes of shifting agriculture? or the physical elements of folk architecture? or house-types, either rural or urban? or village morphology? or dietary regimes, or the various elements in the place-name cover? I have no doubt that these deficiencies can be remedied; but, until they are, the best-intentioned teacher is left in the lurch. The lack of such descriptive apparatus is reflected in the scarcity of pedagogic materials, as noted repeatedly below.

Matters are further complicated by the fact that cultural phenomena can be subject to rapid change and that, unlike the situation in the similarly dynamic field of economic phenomena, we don't yet have more than a few inspired guesses as to the nature of the machinery at work or what determines rate, direction, and manner of change. (We can partially except the study of linguistic change from this indictment and, possibly some phases of social structure and particular kinds of technology.) Embarrassing as it is to do so, we must confess that, aside from such quite general, imprecise notions as the age-area concept or the diffusion process (which has not yet been precisely formulated on any but a microscopic level), the cultural geographer cannot yet bolster his morale by boasting about any Grand Theories. His is not the happy lot of the land-form student with his Davisian Theory—or latter-day improvements thereon—and his indubitably scientific models of drainage systems, or the climatologist who sups richly on physical theory, the social physicist, the regional scientist, or the economic geographer brandishing such glorious status symbols as gravity models, the size-rank rule, input-output analysis, central-place theory, and the like, the student of population with that grand, overarching theory of the Demographic Transition, or even the biogeographer with a certain reserve of ecological hypotheses to call upon. [But it may be noted in passing that the late, intrepid Griffith Taylor made some interesting gestures toward a large theoretical design in historicocultural geography. (Taylor, 1936; 1946)] I must insist, however, that this plea of theoretical poverty need not inhibit us from using such facts and devices as we do have while awaiting the advent of academic respectability when some plausible major hypotheses are unveiled. The trouble is not that we face a case of arrested development or innate sterility but rather that the study of cultural phenomena is comparable to one class of underdeveloped countries: a potentially rich land filled with poorly known, minimally exploited resources, with too few inhabitants, and too little input of capital and skills.

For your amusement or instruction and as a possible incitement to discussion, I am appending a brief document previously prepared for classroom use entitled "Some Basic Doctrines in Cultural Geography, Such as They Currently Are." This is a listing and definition of six axioms or general principles, along with several more or less logically derived corollaries, that appear valid and are at least tacitly accepted by our confrères. You will note that while these principles may be helpful in observing present or future cultural process, they offer only modest aid in accounting for the bewildering diversity and complexity of the cultural patterns bequeathed us by past generations.

On the positive side of the argument for insinuating the cultural approach into college geography, two forceful points can be scored. Firstly, students—and indeed people of all ages—are intrinsically curious about exotic peoples and places: Human variety does intrigue us, even when our knowledge is based on faulty, incomplete, or mangled information. This is the same instinct that lures us to zoos or carnivals, and lends itself all too readily to trivialization or obscurantism. Thus it is all too easy to do no more than "Look at the pretty (or squalid) slides" or exclaim over the quaintness of heathen folk, and end up by reinforcing our initial intimations about our infinite good sense in having been born in God's Country. Unlike the situation in many another branch of the field, where the questions at hand are remote from everyday experience or our instinctive interests, here in cultural geography, we need not trick or cajole the student into a state of mental alertness. The real problem is what questions we shall ask, how to take full advantage of this naive curiosity, how, in short, can we educate in that most basic sense of leading the student out of himself into as broad and deep a comprehension of the world as possible.

A second motive is that the inculcation of the basic premise of cultural geography, i.e., that of cultural relativism, is a major educational objective in and of itself. An awareness that the perception of people, ideas, values, places, even physical objects is strongly predicated on just which cultural window one views them from is not only the beginning of geographical wisdom, it is a necessary, if not a sufficient, precondition for effective international citizenship and for an intelligent grappling with that teeming throng of social, political, and economic problems so grimly predictable in our world of rapidly intensifying long-distance linkages. The mental stance called cultural relativism is not an easy proposition to put across; but I submit that it is one of the major discoveries of modern social science, that it is peculiarly relevant to geographical study, and that, in social and intellectual value, it probably transcends any other message we can transmit to the student. In a broad sense, of course, this idea is but one facet of that fundamental dictum of scientific method—the relativity and incompleteness of human knowledge. If we succeed in making the student realize that, insofar as there is an objective cultural reality, we must allow for instrumental error and distortion by us and other culture-bound people-oglers, we shall have more than earned our salaries. May I hasten to add the disclaimer that I do not preach an absolute cultural relativism: advocacy of a bland, insipid "one-world" ideology to the effect that all men are brothers and Just Plain Folks who need only to hear the True Gospel before they clasp one another in a warm millenial embrace is perhaps nearly as indefensible as militant race-baiting. It is nonsense to pretend that all human values are equally worthy or that one culture may not be superior to others in at least selected departments. The great issue is precisely how we can go about measuring and comparing them dispassionately.

If I may descend to the mundane sphere of classroom procedures and logistics, the instructor who would like to make the most of the cultural approach had better replenish his supply of aspirin. Most immediately perhaps, there is the perennial question of textbooks, assuming that we are unable to wean our students away from these security blankets. Restricting ourselves to English-language publications (as is regrettably necessary for nearly all types of undergraduate books in this country), the choices are quite restricted. Even though each of the standard items is meritorious in its own way and for its own purposes, and contains certain passages that are most welcome in a culture-oriented course, no individual volume begins to qualify as *the* book to use. Possibly such a work may emerge in the fullness of time; but in the interval we must make do with makeshift expedients, especially the do-it-yourself reading lists that yoke together a variety of articles and chapters of disparate length, level, and purpose from a highly miscellaneous herd of publications. An informal grapevine already operates among likeminded cultural geographers that lets us readily cannibalize one another's anthologies; perhaps less impromptu, more efficient interchange of such surrogate textbooks might be well worth considering. If the marketability of the best of such collections is sniffed out by some of our more alert commercial publishers, a regular bound book – or series of such – would be a distinct possibility. And, of course, the growing abundance of small, relatively inexpensive paperbacks in anthropology, sociology, economics, history, biology, geography, and other relevant fields – and the unlimited number of possible combinations among them – offer attractive opportunities for assigned readings in courses with or without a regular textbook. In addition to textual materials, it would be useful to have available an atlas with major emphasis on cultural topics, along with printed sets of base maps, sketches, diagrams, and drawings of various artifacts and other pertinent objects. [The closest approach to this is Fuson and Ray, 1960.]

The availability of various kinds of visual aids is a never-ending problem in cultural geography. There are very few wall-maps, foreign or domestic, that are of any utility, yet a great many topics that could and should be depicted for the world or for major regions at wall-map scale. It is, of course, feasible to produce one's own manuscript drawings for classroom display, if source materials, time, funds, and skilled assistants are available. The fact that there is as yet only a limited market for such drawings inhibits commercial preparation and reproduction; but it is at least remotely possible that the resources of several schools could be pooled for small editions of the desired items. The use of carefully selected topographic maps to illustrate cultural features has much to commend it. A major effort along these lines for U.S. topographic quadrangles is currently in the discussion stage [If the project is consummated, it will result in the publication of a work that will supersede N.A.S.-N.R.C., 1956]; but the effectiveness of large-scale map study could be enhanced many-fold if sets of especially interesting and/or characteristic sheets were assembled and brief commentaries prepared for a wide range of countries. I cannot suggest any specific mechanism whereby such map kits could be chosen, procured, and distributed;

but it is certainly a project to be pushed at the appropriate time and place. Almost precisely the same thing can be said about a truly good set of aerial photographs for the edification of students of cultural geography, except that the many delicate, time-consuming chores in photo procurement would make such a project even more trying than the topographic map enterprise.

Anyone who has ever tried to assemble a first-rate arsenal of lantern slides will agree that this calls for a large fund of saintly patience, steely determination, doggedness in the field, a bibliographic sixth sense, and a friendly nod from Dame Fortune. All sorts of materials can be fodder for a good slide set—except perhaps topographic maps, which pose some demanding technical hurdles. Aside from one's own more virtuosic shots in the field, there are commercially distributed slides, maps, drawings, and photographs appearing in an endless array of publications in all parts of the world, and drawings prepared specifically for slide use. The sources are so diverse and scattered and the likelihood of a single individual ever sampling more than a minute fraction of the potential field so limited that here we have a glorious opportunity for academic collusion. It should not be difficult to create a central pool of information and master copies from which the individual teacher could assemble his own stellar file of slides to illustrate a specific theme or topic. I should also like to see something done to develop first-rate film-strips or even some motion-picture films on topics of concern to the cultural geographer, whether by commercial concerns or some *ad hoc* academic team.

At the peril of being labeled exceedingly old-fashioned, let us not overlook one important pedagogic device: the carefully premeditated, expertly conducted field trip that gives the student a mind-opening look at the material culture (and significant relics of the past, if any) within easy reach of the school. This is an expedient long employed, with a widely varying range of success, for the study of physical geography and certain aspects of economic and urban geography, but to date only rarely in courses with a strong cultural bent. Under optimum conditions, the rewards could be substantial. The amount of cultural variety, visual excitement, and intellectual ore in the visible landscape within cruising distance of our many campuses varies enormously; but I would contend that nowhere within the North American *ecumene* would such an exercise be futile, if properly conducted. The qualification is important:. The field guide must be inimately acquainted with both the subject and his area; the logistics of student transport, feeding and watering, and class schedules must be surmounted through a minor miracle; field maps and notes must be carefully prepared beforehand; and someone must intercede with the gods for clement weather. But it is really worth it. At the risk of perpetrating one of my more bromidic clichés, may we not think of the science of geography as an Anteus-like entity that, however high it soars into the outer space of theory, will regain its strength only when it returns to and touches the earth?

II.

I wish to propose a series of themes, questions, and devices, all stemming from the cultural axiom, that lend themselves to classroom use (at least potentially) and may be strategically potent in opening broader horizons for teacher and student. In general, these proposals are quite accordant with those set forth in *The Science of Geography* [N.A.S.-N.R.C., 1965: 29-31]. As will be abundantly clear, some of these are quite sketchy suggestions indeed, pending the execution and evaluation of further basic research.

But these more inchoate ideas will at the very least, I trust, kindle a gleam in the eye and sensitize one to the newest stirrings along the research frontiers. There is a certain internal logic in the order adopted here; but any of these items may be used quite independently of the others. To conserve time and patience, extended discussion is offered only for a few, relatively novel items, while the others are given in a sort of shorthand, more as cues for discussion than as detailed "how-to" guidelines.

Note the careful avoidance of plain rote-learning. In counseling the use of larger organizing concepts or the exploration of some of the problem zones in current and future social science, I am well aware that we shall be facing young people with a minimum of background information, and much of that from nongeographic coursework and reading. Ultimately, the situation may be improved by innovations at the secondary school level, such as are being worked out in the A.A.G. High School Project; but we may have to wait well into the 1970's before any appreciable fraction of incoming freshmen have been affected by such programs. What to do in the meantime? Obviously, the gulping down of huge wads of facts qua facts can be utterly dismal and discouraging for teacher and pupil. Although each of us may have his pet devices to minimize the wretchedness of fact-ingestion, may I point out that organizing masses of data around several of the following topics may make the process more bearable and even relatively exciting?

(1) How do members of various cultures perceive their external worlds?

What is possibly the most basic theme of all is, unhappily, the one we are most poorly equipped to handle: the ways in which particular cultures perceive—and evaluate—the physical attributes of their external world. The list of subsidiary questions is long: How is the visible, tangible world perceived in toto? Then, how does the particular group react psychologically to weather and climate? to landforms, to various kinds of plant cover, to the fauna, to the sea and other water bodies, etc.? What do they see as usable resources? How place-bound are they? How sacred are, or how much of an emotional investment has been placed in, various physical objects. What is the scale and orbit of their perceptual world—a few acres? some hundreds of square miles? subcontinental? How do our people perceive such psychological or philosophical ultimates as time, space (or more precisely, distance, shape, and direction), color, and modes of causality among physical entities?

The reasons for our methodological disarray and sheer lack of observations is the extreme recency of this research frontier. It also happens to be one that sprawls awkwardly within the overlapping fringes of various disciplines, notably psychology, anthropology, and geography. Geographers and quasi-geographers have just begun to appreciate the importance of the psychological aspects of any human perception of our outer world [As for example in Lowenthal, 1961; Kates, 1952; Lynch, 1960; White, et al., 1958; and Wright, 1966, esp. pp. 250-285]. They have hardly had the time to work the cultural dimension into this quite fruitful new epistemological approach. But the few probes in this direction are exciting, whether by geographers [Deffontaines, 1948; Isaac, 1961/62, 1964/65; Lowenthal and Prince, 1964, 1965; Pitts, 1959; Gould, 1966] or by others [as in Hall's account of intercultural differences in perception of time and space (Hall, 1959; 128-164), Needham's analysis of Chinese attitudes toward time (Needham, 1966) or Nakamura's paper on the temporal aspects of the Indian and Japanese minds (Nakamura, 1966)]. (Since even less work has been done on how members of various cultures perceive themselves, their inner worlds, or other cultures, I shall refrain from beating the drum for this highly desirable addendum to our curriculum.)

All that can be done, then, is to alert you to the likelihood that in a very few years enough material will have accumulated so that we can help the student to understand, for example, how the Japanese world looks through Japanese eyes, how the Navahos see the American Southwest, or how certain tribes in Kenya regard their homeland—and perhaps eventually, with the utmost possible clarity, just how we Americans really see our surroundings. Need you be convinced that this is not just academic preciosity? That people tend to make over the world about them (whatever its raw, pristine objective reality) into whatever mental image they have constructed? Or that decisions, actions, and general patterns of daily behavior are, in good part, based upon these culturally affected perceptions of the immediately perceivable world? Or that if any group of people are to undertake the radical transformation and upgrading of their economy, society, and environment (with or without intervention from the technologically advanced nations), the peculiar nature of their environmental vision must be carefully heeded? The real problem is precisely how our recent and anticipated knowledge can be worked into the day-to-day routine of teaching. And here I must invite your thoughtful consideration.

(2) What is the nature and geographic significance of the "national character" of the group being studied?

Although there is a reasonable abundance of material on this topic, I offer it with some trepidation. The question lends itself to flimsy, sterile, or even dangerous manipulation; but, on the other hand, when treated discreetly and imaginatively, it has some real pedagogical virtues. After some years of seesaw argument, it is now generally agreed that such a thing as "national character" (quite aside from national sterotypes) does indeed exist, subject it, as we will, to all manner of qualification concerning era, region, class, and individual aberrations. This is also a concept which the general populace and the college student find inherently fascinating. I shall not attempt even to suggest the range of the literature on the subject, except to note in passing the existence of excellent (nongeographic) volumes on such countries as Japan [Benedict, 1946], Russia [Miller, 1961], or Germany [Lowie, 1945], and books of sorts on almost any well-aged country one could think of. If the instructor has sufficient command of the culture of the foreign nation in question to avoid trivializing the subject or slipping into stereotypical clichés, he should be urged to experiment with this approach. What may be particularly useful, however, is its application to the United States, the one nation whose culture and character American students must fully appreciate, the one about which all of us Americans are narcissistically curious (one of the stranger quirks of the national character, by the bye), and the one, quite providentially, for which we have quite easily the largest quantity of literature. [A convenient starting point, in terms of both its contents and bibliography, is McGiffert, 1964.] The field of American Studies, populated largely by students of American history, literature, folklore, art, and music, but alas, by very few geographers, has burgeoned lustily of late, and has produced some discoveries and insights of genuine importance. In any case, Crèvecoeur's classic query—"What, then, is the American, this new man?"—can generate a truly exciting dialogue on what does make Americans tick, how and why they differ from folk of other lands, and what this signifies geographically and historically. One may also choose to pursue this tactic down to the regional level, i.e. the South, the West, Middle West, New England, etc. when working in the area in question, and stir up some interesting problems, if very few answers. The point of using this approach is that the peculiarly American traits in the American character – items that we have only recently begun to identify firmly and to evaluate – are of great, possibly critical importance in influencing our use of this land and its resources, the appearance of the American landscape, our settlement patterns both rural and urban, the structure of the economy, our social and political geography, population distribution and movements, and our external relations with other lands.

(3) "Man's Role in Changing the Face of the Earth" – The Idea of a Humanized Earth"

The belief that the surface of this planet has been greatly transformed by human activity has been so strongly confirmed in the epochal symposium arranged and edited by W. L. Thomas, Jr. [Thomas, 1956] and so emphatically corroborated in more recent publications that it hardly needs further argumentation here. No one can seriously contend any longer that biogeography can be discussed meaningfully without reference to the human factor. In fact, man's activities are steadily extending in effect; and the plant and animal life of this planet and its soils are fast becoming as much a part of the "cultural landscape" as are the various sets of clearly labeled human artifacts. The same observation applies – in principle at least, if less obtrusively in physical fact – to various phases of climate, hydrology, landforms, and even oceanography. Unhappily, the large, complex topic of environmental contamination – geographic autointoxication? – is burgeoning into an issue of major practical, as well as scientific interest. The relevance of all this to the particular theme of this paper is that the timing, character, and extent of human "meddling" with natural processes vary considerably with era and region, the specific nature of the cultural group at work being a major variable. Except as noted in the following item, the widely scattered materials bearing on this topic have not yet been assembled in any form convenient for teacher or student. Nonetheless, I would suggest that the preparation of such material (in both verbal and visual form) would serve a highly useful purpose and that it is well within our technical capabilities.

(4) The use of analogs to illustrate the operation of the cultural factor in human geography

The device of selecting regions that are closely analagous in their total physical geography and comparing their cultural evolution and geography has been exploited with telling effect by George Carter in his recent text [Carter, 1964]. By holding the physical variable more or less constant, he has shown the powerful effect of cultural differences in bringing about the quite dissimilar human situations in the Middle East and the American Southwest, or as between the Eastern United States and portions of Brazil. Indeed, he has probably overplayed the tyranny of cultural factors and the inertness of physical conditions in his unabashed plea for cultural determinism. Nevertheless, there is much merit in this tactic; and it could be applied with excellent results to other sets of physical analogs. Such groupings as volcanic tropical highlands, upper middle-latitude continental west coasts, mid-latitude steppes or deserts, and, of course, the world's half dozen zones of Mediterranean climate quickly come to mind. Moreover, the necessary lecture and laboratory materials could be assembled without much ado from existing, readily accessible publications.

Equally worthwhile results might be attained by turning the tables and holding the cultural factor more or less steady while physical and locational dimensions are allowed to wander. Thus it would be highly instructive to take those populations that have left the British Isles during the past three centuries and analyze the geographically relevant variations among them as they have settled into a variety of distant places and coped with many alien cultures, as well as with sets of unfamiliar physical conditions. The same sort of experiment could be tried for other widely scattered groups of approximately uniform original character: the overseas Iberians; the Germans, Italians, and French now resident outside their homelands; transplanted East Indians and Chinese; or such special groups as Jews, Levantines, and Mennonites. Again, instructional materials would have to be improvised; but there are enough scattered facts lying about, so that the energetic, clever pedagogue could manage.

It should be noted in passing that the analog notion is actually subsidiary to the larger theme of comparative studies. Too much of the research performed by cultural geographers has been limited to particular localities or to narrow topics, without sufficient effort at comparing results in various studies and to reach, through such synthesis, a deeper understanding of the phenomena under scrutiny [as suggested in Brookfield, 1964]. There would appear to be much merit for both research and teaching purposes in cross-cultural surveys of a good many different cultural traits, complexes, and institutions. Some random selections for such a strategy would include: the use of fire in hunting, modes of inheriting real estate, chattel slavery, the use of the horse, or cattle husbandry.

(5) Sequent cultural occupance

In recent years the research technique known as "sequent occupance" has fallen into disuse or even disrepute. In the field of cultural geography, this neglect may be unjustified, especially in those several instances where there have been abrupt mutations in the cultural landscape through invasion, peaceful imigration, or unusually swift indigenous evolution. The student can learn a great deal about cultural process and the endless possibilities for the interaction between man and land by musing over the dramatic shifts in cultural scenery during the past two centuries in such places as Southern California [Thomas, 1959], Hawaii, Peninsular Florida, the Canal Zone, Malaya, Israel, or portions of South Africa. Some effective combinations of maps, photographs, and textual materials could be assembled for this purpose.

(6) The emergence and spread of the principal stages of socioeconomic organization

The past, and even the present, social and economic geography of mankind has been strongly contingent upon the facts of where, when, and how the major *genres de vie* have developed and the ways they have diffused outward from their zones of origin. An appreciation of these facts is valuable not only in a course on cultural or human geography but also in a treatment of political, urban, and economic geography. Strictly speaking, the historical geography of this phenomenon [as developed by Hans Bobek (Wagner and

Mikesell, 1962: 218-247)] is a matter of technological and institutional evolution rather than that of culture in general; but technology and socioeconomic institutions have so strongly infringed upon other aspects of human culture, and total cultural configuration has so decidedly constrained and channeled technology and political and economic institutions that one set of items cannot be considered without the other. This factual time-place perspective is thus important background material in its own right. In addition, it engenders an appreciation of the notion (the age-area concept) that things become simpler and more ancient (as measured on the cultural clock) as one travels further out from the zones that spawned and nurtured the great socioeconomic innovations. This angle of approach also rouses an awareness of the still profound mystery of the successive outward displacement of these particularly creative centers eastward and westward from Southwest Asia and the outlandish odds against the remote, relatively unattractive Northwest European region ever becoming leader and master of the world. There is also the happy circumstance that history has furnished us with two larger human worlds that were for all practical purposes incommunicado before 1492 A.D. – the Eastern and the Western Hemispheres. In these two vast islands the various episodes of socioeconomic advance were played out with roughly analgous, if non-synchronized, scripts. Skipping back and forth between these two great laboratories, we can give ourselves and our students an endlessly tempting menu of food for thought.

(7) The diffusion of selected cultural innovations

This and the following two items all deal with the same basic theme: the dispersion of various cultural traits, or combinations thereof. There is an inherent narrative excitement, almost hypnotic in effect, in the forward surge of a successful innovation that can grip the imagination of an academic audience. And need one be diffident about advertising anything that is both entertaining and virtuously educational? An item properly selected and documented will do more than confirm the simple mechanical laws of diffusion [as worked out by Hägerstrand and his school (Hägerstrand, 1953)]. It will also divulge much about the nature of physical, social, and cultural barriers and the general cultural Gestalt of the acceptors and non-acceptors; and, of course, we learn about the repercussions of cultural change for the receiving community. Out of the many rich and inviting potential topics for the classroom, not all adequately documented as yet, let me cite the following: the alphabet, in all its many permutations [Diringer, 1948]; the white potato [Salaman, 1949]; the milk complex; the spread of tobacco throughout the Old World [Seig, 1963]; the domesticated horse; or any of great many other domesticated plants and animals [Forde, 1934; Sauer, 1952]; the grid city plan [Stanislawski, 1946; Reps, 1965]; the use of iron; early American housetypes [Kniffen, 1965]; the printing press; railroads; the English language; European dress; and, not the least bit facetiously, Coca-Cola and chewing gum.

(8) The Europeanization of the world

The most significant diffusional event of all, at least in recent centuries, has been the increasingly rapid and effective dispersal from Northwest Europe and its major outposts of the European way of life – in part by the emigration of Europeans, but even more through the spatial extension of European influences and ideas [as discussed in Fischer, 1943, Philbrick, 1963, and Zelinsky, 1966: 70-77]. This supremely important process–Europeanization, or Modernization, if you prefer–has gone on in many ways: exploration, conquest, indirect rule, colonization, missionary activity, trade, and above all, the export and implantation of European values, ideas, attitudes, technologies, and science. Its relevance to all sorts of geographic concerns is too obvious to be belabored here: indeed an entire course could be geared to this single theme. All I need say is that there are entire shelffuls of pertinent literature, so that the problem is one of selection and arrangement. And, once again, an insistent note of caution: the course of Europeanization is not simple, smooth, and automatic. What happened in Japan is very little like the Jamaican situation: the Mexican story reads far differently from the impact of Europe upon India. The timing, source, and nature of the European cargo and the specific character of the receiving cultures must be kept clearly in focus.

(9) The diffusion of modern demographic patterns throughout the world

The sequence of demographic changes–in mortality, fertility, migrational behavior, urban residence, occupational structures, and other traits–that has occurred, or has at least begun, in virtually the entire inhabited world is, of course, just a single phase of the Europeanization process. Although it is of such compelling theoretical and practical importance that no apology need be tendered for singling it out for special attention, its insertion here is something in the way of a speculation [Zelinsky, 1966: 44-53]. My strong hunch is that a great deal of evidence will accumulate during the next few years to demonstrate that the extent, pace, and direction of demographic change, and most especially in fertility patterns, is strongly affected by the cultural configuration of the group under scrutiny. Thus there are legitimate grounds for suspecting that the persistently high, even ascendant, birth rates within Latin America (except where, as in Argentina, Uruguay, or Cuba, the area was flooded with European immigrants within the past 100 years) cannot be explained solely in terms of economic, and derivative social, change. Contrariwise, the relative swiftness with which fertility has begun to drop in countries within the Sino-Japanese culture realm (dramatically in Japan; recently, but convincingly, in Hong Kong, Taiwan, and Singapore; and incipiently in South Korea and mayhap even in Mainland China) gives one pause. If there is anything a prophet may safely gamble on in the social sciences, it is the likelihood that the problem of population control will engross more and more attention on the part of governments, academicians, and the general public during the closing decades of the Twentieth Century and that it will shortly pop up in the college curriculum. Let this paragraph alert you to the necessity of watching for cultural components in the equation as we go about studying and teaching this complicated, fascinating worldwide phenomenon.

(10) The study of the identity, boundaries, and structure of culture areas

Intriguing as the analysis of culture areas may be for the specialist, I cannot conscientiously prescribe the adoption of this theme as the dominant one in any undergraduate course. (For one thing, we cannot yet successfully compartmentalize the world into a valid set of such regions.) But I do strongly suggest that some recognition of the existence and significance of major cultural regions is mandatory in any approach to the economic, political, or general human geography of any area of sub-continental or greater magnitude. This has been demonstrated for Latin America [Wagley, 1960; Augelli, 1962], and is an equally valid point for Africa, Europe, or any major segment of Asia. A more detailed look at a single, carefully selected culture area, or cluster thereof, may serve a number of useful purposes. What correspondence, if any, between the culture area and physical, economic, and political regions and historic events? This query, as applied, for example, to the American South, would be a most effective jumping-off point into a number of theoretical arenas. Where the culture area has a neat, clear-cut nodal structure (e.g. China, Russia, Greater New England, Poland), the model devised by Donald Meinig, with its concentric zones of core, sphere, and domain [and as demonstrated in exemplary fashion in his study of the Mormon area (Meinig, 1965) and in unpublished classroom materials on China] offers some attractive possibilities for exploring the interplay among cultural, physical, political, economic, and historic factors. Where complex, overlapping, intergrading culture areas exist, as in India, the Balkans, or Malaya, their analysis in the hands of a skillful instructor can arouse a multiplicity of exciting questions.

(11) The cultural structure and adequacy of modern nation-states

This, I submit, is a most attractive, productive, and quite pliable analytic device in the classroom. We have been long habituated to texts and lectures that assess individual nations in terms of the adequacy of their physical resources and economic development. In similar fashion, the question "How much cultural sense is there in the existence of Nation X?" offers splendid scope for a probe to any depth one pleases into the cultural structure of the nation-state and the give-and-take among a variety of geographic factors. This is premised on the fact that the nation-states are, and will for some time remain, a paramount fact on the geographic scene, and that their viability in the face of cultural variety and tensions within each (most readily gauged in terms of language and religion) will continue to be a lively issue, despite the juggernaut effect of national standardization within the well-run country.

Providentially, recent history has given us a number of thoroughly absorbing experiments in the form of newly independent nations in Africa, Asia, and Latin America. The instructor can have a glorious time exploring the cultural patchwork or centripetal vs. centrifugal pulls in such places as Indonesia, the Philippines, the abortive West Indies Federation, Cyprus, British Guiana, Trinidad and Tobago, the U.A.R., Nigeria, the Congo, or that reliable old standby for any kind of cultural phenomenon – India. Nor need we confine ourselves to the new nations: almost any European nation, with the exceptions of Eire, Austria, Malta, Iceland, Denmark, or Norway, will serve handily, as will Canada, Brazil, or the U.S.S.R. Not enough general literature has been published on this theme [There is some worthwhile material in Weigert et al, 1947]; but the enterprising teacher can collect and develop the scattered factual building-blocks without undue strain. Here, too, the comparative approach and the use of analogs is a serviceable ploy. For example, the juxtaposition of Yugoslavia and Switerzerland, the United States and South Africa, or Fiji and Surinam might lead to interesting consequences.

(12) The geography of the confrontation of contrasting cultures

This is truly and lamentably a virgin field for the geographer, whether as research scholar or educator of the young. I can only plead that in a world of intense, accelerating movement and meeting of highly diverse people the issue of cultural relations should absorb the attention of many of our colleagues. Obviously, one of the more dramatic manifestations of clashing cultures takes the form "racial" conflict; and the study and teaching of this phenomenon has much to commend it. But I for one would dearly love to have available for classroom use a text that tells us something of the geographic effects of such contacts as those between quasi-Caucasoid Moslems and West African Negroes, Mexicans and WASPS in the American Southwest, Swedes and Finns in Finland, Jews and Arabs in Israel, English and Maori in New Zealand, Russians and non-Russians in Soviet Central Asia, Arabs and Berbers in the Mahgreb, or Tamils and Sinhalese in Ceylon. I fear that we shall have to wait for some years.

(13) The concept of the "cultural landscape"

The concept of the "cultural landscape" [discussed by Wagner and Mikesell, 1962: 1-24] is an elusive one. But, if for the time being, we limit ourselves to the visible, directly observable features of the earth's surface, there is much to be said for experimenting with the use of selected landscapes as diagnostic of specific cultures and as offering provocative hints as to the character and workings of those cultures. Here, of course, we must rely heavily on good, large-scale topographic maps, aerial photographs, ground photos, and diagrammatic representations. The array of features which, in ensemble, make up the tangible cultural landscape would cover all aspects of land-use (including the nature of lands excluded from direct human exploitation), construction, and human manipulation of the surface. A partial list of items includes a wide range of agricultural phenomena–kind of production, size, shape, arrangement, and placement of fields, fences, wells, ditches, canals, and terraces–all settlement features, rural and urban, and artifacts of any appreciable size, roads, trails, and other transport features, mines and quarries and the impact of human activity upon "wild" plant life, whether obvious or subtle. Although many of the individual items are of much interest in themselves, emphasis would fall mainly upon the total patterning and interaction of the various elements. One of the more obvious ways of organizing this material might be the blocking out of "typical" villages or other basic rural settlement units and their tributary areas. It would be wishful thinking to assume that anyone could start teaching such material in a coherent fashion in a classroom tomorrow. An enormous amount of raw material is scattered through the existing literature and cartography; but the editorial drudgery necessary for its proper arrangement would be heroic. I believe it is worth the effort.

(14) Cultural determinants in urban morphology

American cultural geographers have been accused, with some justice, of being more than necessarily rural in orientation. This tribal foible may be understandable in the light of the strong historical bent of cultural studies, the conservatism of the countryside, and the many aesthetically repellent features of recent cities. But the time is overripe for a change in mystique. For better or worse, the city is here to stay, and is encompassing an ever-increasing portion of the world's population and human doings of all kinds. There has been a regrettable tendency to regard urban geography as a satellite of the newer economic geography, or of regional science– a dehumanizing propensity to look at cities simply as solutions to problems of supply and demand, or of optimal return for minimal investments. However helpful this simplistic assumption may be for certain operations, it is self-defeating for anyone who wishes truly to understand the geography of cities. Urban morphology is splendidly various through time and space for many reasons: but the factor of cultural diversity is certainly as crucial as any. [This point, among many, is developed in Mumford, 1938, 1961 and in the first volumes of a monumental new survey of urban history (Gutkind, 1965), and is reviewed critically by Schnore and Ginsburg in Hauser and Schnore, 1965; particularly attractive local analyses are Nelson's account of the Mexican city (Nelson, 1963) and Planhol on the Islamic city (Planhol, 1959).] The facts of a city's siting, all phases of its geometry, architecture, and relationships among buildings, its social and economic zonation, its "physiology", and, less tangibly, the general "style" of its existence are all indelibly touched by the cultural heritage of its builders and inhabitants. A searching look at similarities and contrasts among cities of different times, places, and provenance—again, given the proper instructional materials—could yield ample dividends in terms of both urban studies and as a principal approach to the configuration of various cultures.

(15) The human habitation as a key element in studying the geography of man

One particular aspect of the settlement landscape must be singled out for special notice. Houses—whether urban or rural—can tell us an enormous amount about many items of geographic interest: the technology of the community; the availability of various potential building materials; much indirect information on climate, soils, and the class, income and occupation of the occupants.

They are also important witnesses to major facts concerning the culture history and geography of the group. From the testimony of house morphology and style, we can often extract the source, routes, and manner of mingling of peoples and ideas, the structure and limits of culture area, the sequence of local moods in the cultural climate, and a surprising store of information on social structure and the inner character of the people. "To build," wrote Paul Valéry, "is to give reality to a certain desire of the eye."

In view of the immense value of houses (and other structures as well) for so many phases of work in human geography, I am constantly perplexed at how little work has been executed in this area by American geographers of the past or present. [This despite the heavy stress laid on house geography by Jean Brunhes in his widely-read text (Brunhes, 1920)] Kniffen's recent pronouncement on the subject [Kniffen, 1965] necessarily has a missionary tone. Once again the familiar refrain: some very lively, absorbing classroom exercises could be structured around houses and their cultural and other implications, whenever the necessary materials have been put into usable shape.

(16) The study of dietary regimes as a major strategy in human geography

This final suggestion resembles the preceding one in recommending a cultural complex that opens doorways into many geographic chambers. In fact, the data of dietary geography are even more revelatory concerning a wide range of aspects of physical and human geography than is the case with house geography. First and most obviously, human diet is closely correlated with the nature of accessible cropping and livestock systems (and to a much lesser extent the composition of the wild biota), and thus, in turn, it is tied to various characteristics of climate, soils, physiography, and biogeography. What is less obvious, but equally significant, is the fact that, in part, the structure of the agricultural economy is shaped by dietary preferences and avoidances [for the later topic, see Simoon's pioneering work (Simoons, 1961)], i.e. traditional consumption patterns that can be highly irrational in terms of nutritional science or simple logic. These patterns are strongly conditioned by cultural history, by endogenous evolution and borrowings from alien sources, by various religious and obscure phychological factors, all of which are rooted deeply in the essential character of the culture under observation. [Useful and interesting treatments are found in Sorre, 1947, May, 1961, 1963, and Kariel, 1966.] Consider food, drink, and stimulants as one of the major options for enlarging the geographic vision of college students: the subject is important and intensely interesting in its own right; its ramifications into economic and physical geography are major and manifold; but, best of all, it offers immediate, vivid evidence of the strange, devious, and powerful ways in which the all-pervasive cultures within which men live direct their bodies and minds.

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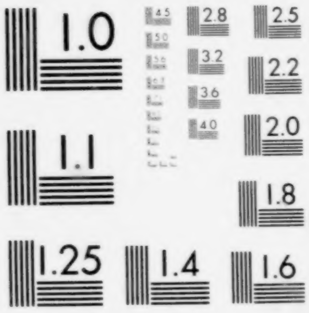
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APPENDIX: Some Basic Doctrines in Culture Geography, Such as They Currently Are

1. The Cultural Axiom

An appreciation of both the basic structure and dynamics and many of the specific traits of a culture is basic to the study of the human geography and many phases of the physical geography of the places in which that culture has been operative, for culture is a prime genetic factor, along with physical and biological processes, in the shaping of the character of places.

2. The Acceleration Principle

The course of human history and prehistory very clearly indicates—despite some temporary and local slowdowns or even reversals—a general, gradually accelerating growth, now reaching the runaway stage, in the richness and complexity of technology and of social and economic organization, and in the incidence of innovations in the foregoing.

Corollaries:

a. Population size and density, innovation rates, and level of socio-economic development tend to be positively correlated to a highly significant degree.

b. General cultural change, and more specifically technological change, tend to be particularly rapid in zones of vigorous intercultural contact and exchange and/or relative material abundance and leisure.

3. The Diffusion Principle

Given effective technical means for its transmission, a cultural innovation (whether a single trait or an entire cluster or complex, and whether it be transmitted as an idea or as a tangible object) that either enhances the viability of a group or its material level of living or more fully satisfies the psychological needs of individuals or the community than pre-existing cultural practices will spread outward to all parts of the inhabited world except where impeded by physical barriers or by institutional and other cultural barriers.

Corollaries:

a. Other things being equal, the recency and stage of advancement of a cultural pattern tend to be inversely proportional to distance from one or more cultural hearths (as measured in terms of elapsed time required for cultural transmission, rather than simple physical distance).

b. Not only cultural traits, per se, but also those populations that are carriers of relatively effective, i.e. "superior," cultures in the technological sense, will tend to disperse outward in accordance with the diffusion principle.

c. The process of diffusion is the principal instrument of major cultural change (as opposed to lesser changes induced by genetic drift, local invention, or the direct interaction between man and physical environment) for most areas and populations during most periods of human existence.

d. In accordance with the acceleration principle, the velocity of the diffusion process has increased rapidly during recent centuries and decades.

4. The Principle of Progressive Areal Interdependence

There has been a steady, accelerating progression among mankind in general, and in those areas within or near major zones of innovation in particular, from a situation in which communities were relatively isolated and self-contained toward ever tighter weblike systems of areal integration and interdependence on many levels–including the economic, technologic, political, and ideational. This evolution from near-autarchy to complex focality has taken place on several areal levels–the local, regional, national, and international.

Corollary:

a. This increasing degree of areal interdependence has been accompanied by a parallel increase in functional specialization on the part of individuals, communities, and regions.

5. The Principle of Limited Parallelism

Despite a large amount of random change in all eras and places, cultural static so to speak, there is a certain internal logic or even orderly development in many of the more important sequences of cultural change. For this reason, under approximately similar conditions, rather similar developments may occur–though not invariably–in widely separated places, at the same or different times, even though there is little, if any, effective communication among them.

Corollary:

a. By an extension of the same principle, an invention may appear simultaneously, and with apparent spontaneity, at several distinct localities within the same cultural realm when the time is "ripe" for it.

6. The Principle of a Humanized Earth

Concomitantly with the acceleration of technological change, the rapid areal diffusion of such change, and the powerful systems of interregional exchange of raw materials, people, tools, and ideas, the physical character of the earth-shell is no longer a set of phenomena governed almost exclusively by basic physical and biological processes, among which human activities play a negligible role, but is now increasingly and profoundly affected by such activities. This is particularly true of growing relevance to the study of climate, landforms, hydrology, and even the oceans.

Corollaries:

a. The terrestrial changes initiated by human activities generally are conducive to, or result from, some short-range benefits to the people concerned; but in most cases the long-range effects have been or appear prospectively to be detrimental to the human species and to other forms of life.
b. Many of the terrestrial processes initiated or affected by human beings result in irreversible changes in the environment. This is the case even when the people or the activities in question have ceased to exist.

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CULTURAL GEOGRAPHY*

Donald W. Meinig

Preface

This paper is focused rather narrowly upon the introductory course designed for Syracuse University. I have thought it best to leave more general considerations for informal discussion. The course is offered simply as an example of one created to serve in a particular liberal arts setting. It is certainly not presented as the ideal course, it does not purport to include all the most important themes in cultural geography. It is, moreover, a course still very much in development and therefore somewhat uneven in both content and theoretical structure.

I have also confined this statement to a consideration of basic terms, themes, and pedagogy and have not presented an example of how these are applied to a specific culture. That, too, will be presented orally.

General Objectives

This course represents a cultural geographer's attempt to interpret the world in terms of some basic perspectives of his field. It has been specifically designed to serve the needs of general education in a liberal arts program.

A secondary consideration is to introduce the student to the field of geography. This is done through consistent stress upon what geography is, the constant use of maps, and repeated use of certain geographic concepts. However, no attempt is made to give the students either a comprehensive or balanced introduction to methods of research in geography.

Further, the complementary relationships of geography with history, with the social sciences, and, to a much lesser extent, with the humanities is implicitly displayed throughout the course.

Basic Terms

1. Geography:

Geography is a point of view. It is not the study of any particular thing but a particular way of studying anything. While much of the work in cultural geography is of social science character and most geographers work in some degree as social scientists, the field of geography as a whole is analogous to history, not to the sciences. The ultimate product of geography is therefore integrative rather than disintegrative, a synthesis rather than an analysis, a pattern rather than a process. This is not at all to say that geography is not concerned with analysis and process, but only with geography, like "history, does not ignore process, but it does refuse to set it as its first objective." (Kroeber) Pattern without process yields an incomplete and unsatisfying geography but process without pattern yields no geography.

2. Cultures:

(a) In general, the peoples of the world can be grouped into a number of relatively discrete, cohesive, organized units whose members are bound

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*Prepared in accordance with the guidelines suggested by the directors of the Institute, and published without revision.

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together by a common heritage, patterns of life, and functional interdependence. The definition and interpretation of such complex groups is difficult and controversial, nevertheless they are commonly recognized as the most important general divisions of mankind and studies of them as generalized "patterned aggregates" (Kroeber) have yielded significant results.

All such cultures have certain necessary systems, the most basic of which can be conveniently categorized as follows:

(1) philosophy & religion
(2) aesthetics
(3) social system
(4) economic system
(5) political system
(6) language

Yet each culture gives these different expression and is thus a unique "configuration".

(b) Such cultures differ enormously in magnitude, from small isolated tribes almost wholly insulated from contact with others to huge organized units which have successfully integrated many millions of people, expanded over large areas, and strongly influenced other groups. These latter have been variously labeled as "civilizations," "great cultures," etc. They are of special significance in this course and will be called "macro-cultures".

(c) Although in the main such cultures seem to exist as functional units, actual patterns are so complex as to make any simple enumeration or regional division a serious distortion of reality. Commonly a particular group may be simultaneously part of an identifiable subnational culture, national culture, and macro-culture, but these several levels will differ one from another in character and significance and do not represent a simple hierarchy.

3. Cultural Geography:

In common usage this term simply refers to that part of the field of geography which gives emphasis to the study of culture patterns, as distinct from that part which gives emphasis to the study of patterns created by physical processes on the earth. This course is really "A Geography of Cultures," as it undertakes the study of discrete regional cultures rather than a systematic study of cultural features.

Basic Themes

1. Cultures as Geographical Growths

In this theme the focus is upon the study of areas of origin and the patterns of expansion from such nuclear areas. Of special interest is the challenging problem of the culture hearth: why and how do particular culture patterns become established in particular areas? Geography alone can never explain such creativity but a particular type of geographic situation does seem to be common. To use somewhat "Toynbeean" terms, hearths appear to be locations which at the critical formative time are optimal for the

(a) stimulus of ideas, arising from sustained contact between unlike cultures.
(b) stimulus of pressures, arising from a chronic external threat, which favors the development of efficient organization and facilities in response.
(c) stimulus of resource rewards, arising from some new means of exploitation or distribution which yields a significant new level of economic surplus.

Major cultures obviously represent major areal growth beyond the area of the hearth. Such expansion is always selective in area, uneven in timing, dependent upon numerous internal and external factors. Where actual population movement has been strongly focused in a particular direction it will be useful to label that area as the demographic front of the culture. It is likely that a useful set of general concepts can be developed which will describe the most typical conditions and patterns of areal expansion.

2. Cultures as Geographical Morphologies

Every culture of any considerable size will have important regional variations in the density of occupance, intensity of organization, homogeneity of its principal characterizing features, and areal relationships with other cultures. Such patterns are sufficiently common to warrant the use of a simple set of concepts to apply to these various parts:

(a) core–the zone of concentration, displaying the greatest density of occupance and intensity of organization, and the area most representative of the definitive characteristics of the culture: the seat of power, markedly nodal in character with spatial interaction focused upon political and commercial capitals.

(b) domain–outlying area dominated by the patterns of the culture under study but with less intensity and homogeneity. The domain is likely to be characterized by underlying strata of localisms in, for example, dialect, religion, architecture. It will have lower densities, simpler networks, and less varied and intense economic development. It may have considerable political autonomy and strong local allegiances. It may include ethnic minorities, subverted but as yet unassimilated.

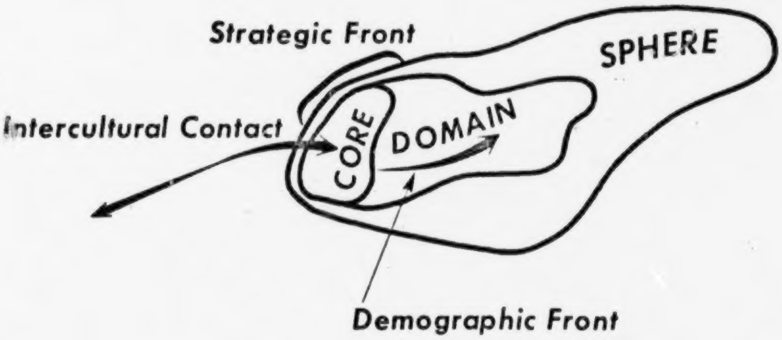
(c) sphere–beyond the area dominated by these patterns may be a zone of influence wherein important elements of the culture under study may be apparent but not dominant. Here these elements become alien influences spreading into local cultures. This may take the form of peripheral acculturation stemming from diffusion, or actual movement of peoples intruding as minorities into peripheral local cultures. One basic distinction between the domain and the sphere is that between a majority and a minority position; another is that between those areas wherein local cultures have lost control of cultural change (domain) and those in which they retain some important control over the type and degree of cultural borrowing (sphere).

Sphere characteristics are readily apparent in many parts of the world. Typically, representatives of the major culture reside in cities as officials, soldiers, merchants, missionaries, with little effect upon the rural population. In spheres the majority of the people retain their indigenous language, religion, and other basic social patterns. Trade links and political relations (if any) with the core are tenuous and limited.

Every culture lives in contact with others, usually along every border except where shielded by some broad uninhabitable space. However, contact with major, creative, cultures which bring cultural change is much the most significant and such contact is usually with one particular culture and maintained along a particular route or zone of connection. Such localization can be depicted as the intercultural contact.

Another intercultural feature is the strategic front, the area of persistent danger or political tension. Where that danger is military in type, concentrations of walls and fortresses, garrisons and depots, may be readily apparent; where it is merely political it may be more diffuse and less obvious but the political history of the culture will surely reveal its general location.

Such a morphology represents a framework which may be diagrammed as follows:



However, clearly such patterns would only be static summations of ongoing processes and thus it is important to see that there is need to look further at:

3. Cultures as Geographical Systems

I am far from being very knowledgeable about systems theory but I think it is quite clear that tools are not as yet capable of analysing with any great success anything as complex as a culture. Nevertheless it is at least useful to try to think of cultures in such terms.

(a) Clearly a common, though usually not explicit, conception is of a culture as a kind of mechanistic works which operates in basic equilibrium: culture is a harmonious integration of social, political, economic, aesthetic, religious, etc., functions – a Culture as a "clockworks," to use Boulding's descriptive hierarchy of systems. Within such a conception geographers are most likely to be interested in the ecological foundations or in spatial flows within its areal structure.

(b) A second, but as yet much less developed conception, is of a culture as an "open system," a system which by the very routine of its operation tends toward expansion and change. For example, with gradual increases in the efficiency of communications and the duration of operations, there may be a tendency toward closer integrations and a homogenization of cultural features, a gradual transformation of variety into uniformity (or, to use morphological terms, of a *domain* into a *core*). Furthermore, there may be routine processes which gradually work toward diffusion and migration outward leading to expansion and dominance over ever larger areas, a gradual transformation of minority into majority (or, of a *sphere* into a *domain*).

Conversely, if a culture loses its efficiency and vitality it may contract and disintegrate.

The geographer's concern and contribution here is always to connect processes of change with areal patterns of function.

4. Cultures as Elements in a Dynamic World System

The application of the foregoing concepts to a survey of the major peoples of the world results in a complex pattern. The world viewed at any time during the last two or three thousand years would show a few unmistakable macro-cultures, a few possibly incipient macro-cultures, some broad realms of basic cultural similarity without cohesive organization, and other areas of various sizes and various degrees of cultural variety and complexity.

Although it may involve quite as much (and possibly more) subjective judgment and arbitrary classification, such a view is offered as a much more realistic view of the world than the delineation of a few "culture worlds" or "culture regions" and sub-regions.

Furthermore, it offers the very great advantage of seeing the world as a kind of complexly developing system functioning within and among these major units, which units are themselves constantly undergoing areal change. The historical geography of such a gross panorama of cultural development certainly suggests an erratic trend toward wider and more cohesive integrations which may result in a world completely encompassed by a few great macro-cultures, and beyond that, perhaps, fewer and fewer until there emerges a single basic world culture. (cf. Teilhard du Chardin's concept of the noösphere). Thus the cultural geographer becomes a philosopher of history—a rather fearsome, but highly stimulating, and, I think perfectly appropriate role.

Some Pedagogical Matters

1. Organization

This course has been presented as a two semester sequence with two lectures (50 minutes each) and one conference section (50 minutes) per week for three credits per semester.

All of the basic concepts, themes, and descriptive cultural material are presented in the lectures. In the conference sections (of 10-25 students each) graduate assistants work closely with the students with atlases and other maps, chiefly dealing with the physical geography of each large area just prior to that area being treated in lectures. They also deal with basic distributions of crops, minerals, and industries, and clarify where necessary lecture or textual topics.

2. Materials

The basic texts are *Goode's World Atlas* and McNeill, Buske, Roehm, *The World: Its History in Maps*.

Each term a group of paperbacks is used for supplementary reading:

1st term:

Linton, The Tree of Culture
Matthew, Asia in the Modern World
Hall, Japan: Industrial Power of Asia
Wallbank, A Short History of India and Pakistan
Bohannan, Africa and the Africans
de Planol, The World of Islam

2nd term:

Mumford, Tehnics and Civilization
East, The Soviet Union
Lerner, America as a Civilization, vol. 1
Nicholson, Canada in the American Community
Wagley, An Introduction to Brazil

I have tried two different standard cultural geography texts but for various reasons have decided that the use of atlases and paperbacks is more satisfactory. As there are always new paperbacks appearing I have made some changes in the list every year. In the future I plan to add Broek, Compass of Geography, to the first term list as a very useful means of introducing the student to the field of geography.

3. Basic Ways of Looking at Phenomena

The course offers the student

(a) Description:
Of the basic specific features of each culture; of the land it occupies; of the major events in the development of its culture area.

(b) Classification:
Of mankind into general culture groups; of the earth into generalized culture regions; of culture regions into components of the geographic morphology outlined above.

(c) Interpretation:
Of how and why these particular geographical patterns have developed over the globe and of some of the important problems which have resulted therefrom.

(d) Prediction:
Of incipient geographical patterns, based upon historic trends within the particular culture under study and analogous patterns already developed in other cultures.

However, because the course does not stress methods it gives the student little experience with or example of detailed analysis.

Relevance of Current Research Developments

A course such as this one is inevitably the cumulative and somewhat eclectic product of a good many years and it becomes difficult to sort out just what the most important influences have been and how it is related to current developments.

Basically the ideas have been drawn from history, anthropology, and geography. The most important influences have been those of Quigley (The Evolution of Civilization—the essence of a course I had from him). Northrup (The Meeting of East and West), Toynbee (A Study of History), Turner (The Great Cultural Traditions), Mumford (esp. Technics and Civilization), Kroeber (esp. The Nature of Culture), Linton (The Tree of Culture), Russell and Kniffen (Culture Worlds), and Spencer (Asia East by South).

Currently the numerous works of Karl Deutsch (esp. Nationalism and Social Communication and "The Growth of Nations") seem most seminal. McNeill (The Rise of the West, A History of the Human Community) and Hodgson ("The Interrelations of Societies in History") represent new orientations in history of special relevance, and of many journals the interdisciplinary quarterly Comparative Studies in Society and History seems to be most consistently focused upon relevant matters.

In geography it seems clear that the most prominent current enthusiasms are not oriented to any kind of broad historical cultural geography. However, a glance at a survey such as Haggett (Locational Analysis in Human Geography) suggests much that is at least potentially relevant to classifications, morphologies, and systems of complex cultures. Bjorklund's microgeography ("Ideology and Culture") and Murphey's current research ("The Treaty-port phenomenon as a focus of western influence and Asian responses") seem examples more obviously relevant. On a global scale, Philbrick's work (This Human World) very effectively presents a systematic approach to regional geography which contains many similar themes and ideas. Finally, anyone who attempts any kind of generalized global scheme will also always remain heavily and gratefully dependent upon really good, discerning regional interpretations (e.g. Lowenthal, "The Range and Variation in Caribbean Societies," Fisher, Southeast Asia, Spate, India and Pakistan, James, Latin America) and the continued production of such studies is essential to the health of geography.

ON REGIONAL AND OTHER GEOGRAPHIES

Norton S. Ginsburg

My assignment for this Institute was to comment on the role of regional geography in introductory courses in geography. My interpretation of this assignment was to attempt some bridging of what appears to be an ever-increasing gap between regional and other (i.e. systematic) geographies, not only in the teaching of introductory geography but also within the field as a whole, since the gap inevitably descends through the hierarchy of geographic enterprise, from the frontiers of research to the frontiers of pedagogy. Inevitably also, this interpretation of assignment means a concern with some rather broad methodological issues and with definitions of terms, all of which represent well-tilled ground over which the reader may choose to move only with understandable reluctance. The objective, however, may be worth the effort, since what is at stake is the regional approach to and the regional concept in most geographic instruction, and few would be happy to see that approach abandoned without some careful consideration of the problem it represents to the profession.

First of all, one may ask whether regional geography can or should be separated, logically and practically, from the rest of geography, and whether the distinction between systematic and regional geography is appropriate. Certainly, it is possible to argue that this distinction is essentially false; that all "geographies" are concerned to a greater or lesser extent with regional configurations and topical foci; that, therefore, all studies definable as "geographical" contain both systematic and regional ingredients. In an earlier chapter in which this point was made, I also identified the regional concept as "the logical result of attempts to organize knowledge concerning . . . the ways men have occupied the surface of the earth"; and the regional geographer as an "integrator of given data (from more nearly topical studies) into systems of regions." Elsewhere in that text, I distinguished between generic and specific regions, and between uniform and functional or nodal regions; and, in passing, defined the functional region as "a dynamic concept, concerned with the ever-changing relations among a complex of (occupance units) differentiated from each other by specialized forms and functions and associated in a hierarchial system based upon size and a multiplicity of functions."[1]

I refer to my own material and quote it, despite some qualms concerning the bad taste involved, because these remarks are on the record, and in the years since they were written I have discovered no reason to change the basic orientation of their argument. On the other hand, I should not leave the impression that they were original with me. On the contrary, although the draft for this chapter was first prepared for the Graduate Library School at the University of Chicago in 1949 and was used in syllabus form for several years thereafter, it was based even then on the ideas of the nearest thing to a "Chicago school" that has existed to my knowledge, a group of geographers trained under H. H. Barrows, Charles Colby, Wellington Jones, and Robert Platt, chiefly prior to the second World War. Their's was above all a "scientific" geography, concerned with area analysis, with regions as systems, and with the comparative method as a device for developing hypotheses concerning areal relations and processes. The use of statistics thirty years ago was simple and even primitive to be sure, but their concerns were far from trivial, and the problems with which they dealt were of, to use a somewhat abused phrase, "overriding importance," at least to the development of geographic discipline. The chief characteristic of this "school" was its focus on areas, with regions as special types of areas, and with the processes that bring various types of regions into being and mark them with elements of similarity or differences. To some extent and in this context, therefore, the statement of mine quoted in the second paragraph of this essay is misleading,[2] but reference to it at this point helps illumine some of the basic assumptions of this "school" and certain methodological consequences of its thought.

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[1] B. F. Hoselitz (ed.), *A Reader's Guide to the Social Sciences* (Glencoe: The Free Press, 1959), pp. 70-88. Now under revision.

This thought assumes that the regional geographer does not in fact create systems of regions by any means of his own: that these systems are already in existence; that it is the major task of geography to examine their nature, evolution, and relations with one another. The term I should like to apply to this task is "the regionalization problem," to which the following paragraphs are introductory.

Like all the other social sciences, geography has long been anthropocentric and has shared with them the ultimate objectives of understanding why people behave the way they do in a variety of situations and at various times. It is a truism that men in society organize themselves into groups, with concomitant institutions, in order to attain certain commonly held values and goals and to perform certain tasks in pursuance of these ends. Most of the social sciences are concerned with the ways in which societies are organized, in the common characteristics that they share, and in the differences among them. There is a traditional division of labor among the social sciences in these connections, but all of them, to a greater or lesser degree, possess interests that focus on social institutions, the behaviour of individuals and groups in relation with these institutions, and the processes by which change takes place within and among them. Thus, sociology traditionally has been concerned with certain aspects of social structure and institutions such as the family and the community; political science with political institutions and phenomena that reflect political behaviour within and among societies; economics with economic institutions, as well as individual economic behaviour, presumably directed at maximizing profit, however defined. Traditionally, too, where the assumptions of these disciplines as to what is important are not reflected in the cultures of particular societies, they have defaulted to the anthropologist, who thus behaves as though he were sociologist, political scientist, economist, et alia, all rolled into one. Similarly, the historical study of these problems has been left to the historian, who, though he, too, were experienced in all aspects of the study of society, but only in the past; thus, a plethora of adjectival histories, from political, to economic, to social, to intellectual, to urban, among others, have come into existence.

However, most social sciences, at least until recently[3] (after all, they are in a sense all arts nouveaux) have been little concerned with a major type of social organization, that relating to the areal entities that commonly are associated with social institutions, with what might be considered the "horizontal" (i.e. geographical) dimension of social organization. To just what does this dimension refer?

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[2] In reference to the regional geographer integrating data into systems of regions.

[3] Sociology's "human ecology" is the chief exception, but "ecological anthropology" and "regional science" might also be noted.

Just as men in society organize themselves into groups performing social functions within their sociteies, so do they organize themselves into territorial units, each with special functions that both reflect and influence the ways in which societies are themselves organized. These territorial units, insofar as they are functional, are a consequence of the *organization of area* for given purposes.[4] They constitute an entirely distinctive field of study within the social sciences. They are, in short, regions, and their systematic study is in my view the prime *raison d'etre* for the existence of geography as a modern discipline among the social sciences. The character and dimensions of these regional entities, the ways in which they have evolved, the commonalities that they display in different situations, the discovery of principles ordering their evolution, their functioning as dynamic systems, and their relationships with one another, all are at the core of geographic enterprise. The world is a mosaic of interacting regions of this sort, and the task of interpreting pattern and relationships on world and regional levels is entirely in keeping with geography's traditional orientations.

The focus on area, needless to say, does not mean uncoordinated encyclopedic description, "regional synthesis," or any other of the dead horses that are so often flogged in denigrating regional geography as it might be misunderstood. The processes by which areas are organized, function, and are transformed are, of course, at the heart of the matter, just as they have been ever since, in this country at least, bright "young Turks" like Richard Hartshorne, himself a product of the hypothetical "Chicago school," came on the scene thirty to forty years ago and asked their mentors embarrassing questions about the justification for regarding geography as a modern scientific discipline. Fortunately, the "young Turks" of that period were not obsessed with technique, but were deeply concerned with ideas, some admittedly simplistic, some strikingly insightful and methodologically significant. In contrast, contemporary geography seems to possess almost a plethora of technical expertise, but it still is characterized by a distressing poverty of concepts applicable to a, if not the, basic task of geographic endeavour, the "regionalization problem."

This assertion reflects an understandable impatience which all geographers can share with the seemingly slow progress in the development of key disciplinary concepts, but it might be unwarranted, given the similar conceptual lags, fissures, and debates observable in the other social sciences. On the other hand it should not be misconstrued as an argument against the employment of sophisticated statistical techniques or the development of models and of hypotheses derivative from those models as guides to research. How, after all, can the conscientious and innovative researcher possibly deal with the seemingly infinite complexities of the unique areal systems we call regions, without using models, whether starkly simplified mathematical ones, or the more complex and useful, though far less precise, verbal and cartographic ones? Insofar as there is a problem here it is one between means and ends, and it is the definition of ends that has lagged behind technical developments in geography in the past two decades. In short, there has been a technical revolution of sorts in geography, in part made possible by computer-accessibility to long-developed and complex statistical techniques (e.g. psychologist Louis Thurstone's factor analysis), but there has, as yet been, alas, no ideological revolution. Many of the major questions raised over thirty years ago remain not only unanswered, but all too often entirely neglected.

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[4] The term "organization of area" refers not only to the arrangement of institutions and artifacts, but also to the ways in which the content (e.g., resources) of areas are employed.

This situation is well revealed in the recent report of the NAS-NRC Ad Hoc Committee on Geography,[5] which, except for the section on political geography, is conspicuously anhistorical in its treatment of geographic thought and methodology. By "anhistorical," I do not mean that the report should have been a history of geographic thought and research; that would have been inappropriate. I do mean, however, that the sense of the report is to break with the past, rather than build on it. The authors have chosen to ticket themselves for a kind of conceptual "interplanetary exploration," in competition with a number of sciences hitherto non-competitive, and on unproven theoretical vehicles. In so doing, however, they have missed the boat. There are only two sentences in the report that reflect the long-continuing core of geographic scholarly interest (pp. 13 and 61), the second of which (after dismissing regional and historical geography as useful but thoroughly subordinate to other geographies) states paradoxically enough:

> "Furthermore, a region may be considered a type of system in itself, capable of yielding generalizations significant in the understanding of the world-wide system."[6]

Yet, nowhere is it proposed in the body of the text that any major effort should be devoted by the profession to the study of these types of systems. The omission is astonishing, distressing, even alarming. It is directly relevant to the problem of "regional and other geographies" since it suggests an at least localized insensitivity to those types of research problems which provide geography's raison d'etre in the open system of learning we call the social sciences.

To digress, momentarily, the reader will note that in this discourse, I have not thus far employed the words "space" and "spatial," although tempted to do so, but their omission has been deliberate since they are so commonly misused. I deal with these matters in another place,[7] but will provide one example here, since it bears on certain misconceptions as to the "overriding problem" in geography.

It was Edward Ullman who first introduced the term "spatial interaction" into American Geography. Commonly, and even in some of the other papers prepared for this Institute, the term is loosely interpreted as meaning any kind of connections or relations over the earth's surface, but Ullman himself defined the term in a significantly different way. He wrote:

> "By spatial interaction I mean . . . actual . . . human relations between areas on the earth's surface."[8]

Note his emphasis on "areas."

Hartshorne, recognizing the significance of the semantic problem and uncertain as to Ullman's precise intended meaning, commented in 1959:

> "Ullman has suggested that areal differentiation should be considered as a sub-concept of geography as spatial interaction. The suggestion seems to me to result from a misconception of the former term, if not also the latter. Spatial interaction can only mean relations between phenomena in different places, and these phenomena, whether in place or in movement through space, form part of the character of each area concerned.

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[5] National Academy of Sciences–National Research Council, *The Science of Geography* (Report of the Ad Hoc Committee on Geography, Earth Sciences Division, Publication 1277; Washington, D. C.: National Academy of Sciences-National Research Council, 1965).

[6] Underlining added.

[7] See the article on "Area" in the forthcoming *International Encyclopedia of the Social Sciences*.

[8] E. L. Ullman, "Human Geography and Area Research," *Annals*, Association of American Geographers, XLIII (1953), pp. 54-66. Underlining added.

> Hence, the reverse is the case: variations . . . forms and . . . characteristics of movement, or functions, whether within an area or between it and another, are both included under the concept of areal variation . . . ."[9]

The astute reader will, of course, have long since recognized that the "regionalization problem," shares common blood-ties with Hartshorne's "areal differentiation" as the primary purpose of geographical study.

Hartshorne, however, clearly appreciates the contributions to geography that might be made by adherents of the view, oft-times rejected, that it is a "science" of distributions and location, rather than of areal organization. At the same time he recognizes the fact that this view of the discipline suffers from the same constraint as that of "geography as encyclopedic description": that is, a lack of criteria by which phenomena (or problems) are selected (or formulated) for study. The constraint is modified and in large part removed, moreover, if locational and distributional studies are directed toward an understanding of:

> *The region [as] the areal expression of a logical generalization* of process relationships, and hence a first step in the explanation of the geography of an area.[10]

Or, to put it another way, the comprehension of regions or areal systems, created by men for varied purposes, requires not only area analysis by which various elements in the complex regional system are identified and studied, but also studies leading to greater understanding of the characteristics of those elements in their own right and the ways in which they themselves are distributed and diffused. In short, there is no contradiction between research on regions as units of areal organization and research on the distributional and locational characteristics of selected phenomena relevant to the regionalization problem, but there is a major difference between them – one is *essentially* geographical, the other is not.

At this point, it would be well to note that the functional organization of area results in regions which differ as their *raison d'etre* and cultural settings differ, and major geographical problems exist in understanding changes at the frontiers between and among these different types of regions and in estimating the possibilities for reconciling territorial differences among them. The significance of cultural relativism in this context, as Zelinsky suggests in his paper, cannot be over-emphasized, since it is the environing culture, however defined, of which the territorial unit is an artifact (e.g., the city or metropolitan area). Unfortunately, some otherwise thoughtful scholars, in a number of disciplines, have let dogma impede their perception of the significance of culture in the study of presumably universal behavior. Yet, this *is* a basic issue. Even Christaller has acknowledged the "space-preference" of the consumer in what may be regarded as a doctrinal statement of cultural relativism. Surely, the Master's Way is worth emulating.

In this setting one can conceive deductively of three major types of areal systems resulting from attempts to organize territory for a variety of ends. The first of these is broadly political, and is exemplified by the nation-state, or any other territorial unit in the political-administrative hierarchy. The second, is broadly economic, and would include areal entities ranging from the so-called "resource region" of the regional planner to the hexagonally or rectilinearily (depending upon cultural setting, time, and space-preferences) arranged networks of market centers, which are continually being discovered about the world, though to no geographer's surprise. Third is a category that can only be regarded as broadly cultural, and it is here that some of the more challenging problems in cultural geography fall, to whit, the ways in which territory is organized in order to serve broadly cultural and not specifically political-administrative or economic ends. Yet, in lieu of research knowledge concerning this penultimately "overriding problem," one has still to be content with the term "culture area," a primarily formal and distributional (rather than functional) conception, which the anthropologists have long discarded (possibly because they could not cope with it), and with which, alas, cultural geographers have done precious little in their own right since.

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[9] R. Hartshorne, *Perspective of the Nature of Geography* (Chicago: Rand McNally, 1959), p. 19.

[10] *Ibid.*, p. 133. Bracket added.

Thus, there appear to be at least three major types of areal systems, serving different purposes, sometimes congruent, most often overlapping, the nature of which serve as a major subject for investigation in human geography, and about which geographers, broadly termed political, economic, and cultural, are doing things, often, despite the underdeveloped state of the art, in interesting ways, albeit unrelated.

Here, then, is another operational problem in the field, the seeming lack of communication among its several major segments. Yet, this difficulty may reflect less the inherent unity of the discipline than upon the lack of discipline on the part of some of its adherents. The problem may be less acute with regard to physical geography about which nothing has yet been said, but which is much involved in all three of the major regional demarcations, since who could deny that the political, economic, and cultural organization of area involves the habitat in variously intimate and significant ways, significant both for the creation, operation, and modifications of territorial social entities on the one hand, and to the habitat system and its transformations on the other?

All this is by no means irrelevant to the major subject of this Institute, geography in the college curriculum, since it may provide one way, if not the Tao itself, by which geography as a dynamic, vital social science, with a genuine and substantial mission to perform, can be introduced to college students.

With this aim in view, Ann Larimore Kolars has prepared, at the request of the Commission on College Geography of the AAG, an outline for a new introductory course at the college level, which stems from the same intellectual tradition and involves much the same ideas as those outlined above, though more temperately presented and cogently argued. Her course, which is being tested and no doubt will be modified as a result, is based upon processes of regional formation and development, is in part at least theoretical-deductive in approach, and assumes the fundamental integrity of geographic discipline. In her own words:

> "The course directs primary attention to three types of regions, all products of human behavior interacting with the . . . environment: those resulting from (1) the genesis and diffusion of cultural patterns, (2) the functioning of areas of organization, and (3) the operation of resource utilization (livelihood activities) systems.[11]

In her treatment, the processes leading to these three types of areal systems are combined with two others relating to (4) global variations in climatic conditions and to (5) edaphic and vegetation patterns, to provide the basic quinary organization of the course. To these five ingredients are added several that are derived from them: (a) the transformation of resource utilization systems, (b) adjustments to natural site conditions, (c) the development of settlement hierarchies, (d) the "expansion of a world-circling market economy" together with technological reformations, and (e) the abstraction of simplified models of the process of regional formation and evolution.

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[11] Ann E. Larimore, "The World Regional Geography Course: Alternatives for its Teaching," May 15, 1966. (Hectographed).

Time does not permit further explication of her argument, but it is coherent, attractive, provocative, and of high potential for reaching the abler student and for competing with other disciplinary approaches for his interest and commitment. Most important, it assumes a clearly defined role and responsibility for geography as one of the social sciences, with a distinctive subject matter, a characteristic methodology, and a useful body of generalizations with which to approach a seemingly chaotic but in fact not necessarily incomprehensible world.

Granted, the conception of regions inherent in the Larimore and other somewhat similar approaches to human geography bears little resemblance to the inventory type of approach to various of the world's areas that is often called "regional geography," but to call the latter "traditional," as is sometimes done, is to fail to recognize the intellectual and ideological heritage that contemporary geography possesses. On the other hand, it is not enough to accept the importance of various types of areal systems as a means of introducing the science (or art) of geography to college students. What is required further is the mobilization of the discipline's resources toward the further resolution of its "overriding problem" – that of the world's regionalization, as pattern, function, and process – and a merging of its research and pedagogical frontiers.

[illegible]

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